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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 — PUBLISHED WEEKLY — Single Copies, 15 Cents

Vol. LXVI, No. 5 — **535 North Dearborn Street, CHICAGO, ILL.** — **JANUARY 29, 1916**

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ENTERED AS SECOND-CLASS MATTER, JUNE 25, 1885, AT THE POST OFFICE AT CHICAGO, ILLINOIS, UNDER ACT OF MARCH 3, 1879.
NEXT ANNUAL SESSION, DETROIT, MICHIGAN, JUNE 12-16, 1916.
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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXVI, No. 5 CHICAGO, ILLINOIS JANUARY 29, 1916

THE USES OF MEDICAL BIBLIOGRAPHY AND MEDICAL HISTORY IN THE MEDICAL CURRICULUM *

FIELDING H. GARRISON, M.D.

WASHINGTON, D. C.

If you owe a small debt for a purchase delivered by one of our modern commercial establishments, such as a drug store, a book store or a music store, which knows you well enough to trust you, you will often, on paying your bill, be handed a small card or a bundle of memoranda, from a card index of accounts, certifying that your bill is discharged and that the account is a closed incident so far as the establishment is concerned. In the light of this very common commercial procedure, which keeps track of the smallest details in order to compass large results, it is hardly necessary to emphasize the importance and usefulness of bibliography, whether for the preservation and easy accessibility of records of all kinds, the location and citation of things difficult to come at, or the conduct of a scientific investigation.

Bibliography, as its derivation implies, is only an enlarged system of bookeeping. Shops and police courts, recruiting stations and battleships, laboratories and libraries all now employ the card system more or less as the handiest, most sensible, economical and dependable method of keeping records. A French physician, who was studying hospital systems in this country, summed up his experience to me by saying: "The American hospital revolves around a telephone and a card index." The English mathematician, Arthur Cayley, once defined bookkeeping as a perfect science, because its theory and practice are in absolute accord, so that the detection of sources of error becomes only a matter of expert skill. But bibliography, as Helmholtz said, "hardly deserves the name of science, because it neither enables us to see the complete connection nor to predict the result under conditions yet untried." Yet our efficiency experts have shown us that almost any business can be run in a scientific manner when each of its expert agents becomes himself a sort of specialized card index of his particular department. We are disagreeably reminded of this fact in connection with the present European war, for on this simple idea is based the whole Prussian system of "efficiency"; the idea that, in war or business, every slightest detail is important, the duties of the milkman, baker, printer, or mechanic, as well as those of the soldier and strategist. It was this system which caused the Austrian general Benedek to exclaim, at the outbreak of the Seven Weeks' War, in 1866, "The Prussians are expert people, and we have learned nothing!" (*Die Preussen sind studirte Leute, und wir haben nichts gelernt*!) Any one who has made haphazard notes on any subject in a commonplace book, and has had occasion to compare his attempts to bring order out of this chaos with the ease with which he can arrange and rearrange, or even reject, information recorded on cards, will never think twice as to his choice in any future venture of this kind. It is a game of solitaire which has the advantage of stimulating, instead of depressing the mind, and will always bring in substantial winnings to those who use it with intelligence and discretion.

"There is," said Leonardo da Vinci, "no result in Nature without a cause; understand the cause, and you will have no need of the experiment." Long before Kant, that same great universal genius made the following acute observation: "There is no certainty where one can apply neither any of the mathematical sciences nor any of those which are based on the mathematical sciences." In the conduct of a scientific investigation, it is hardly necessary to state that three methods are commonly pursued by modern workers, namely, the inductive plan of proceeding by experimental "trial and error," reasoning *a posteriori* from particular cases to general propositions, from isolated heterogeneous facts to the natural laws behind these facts; from the consequences of a truth to the truth itself; the deductive method, in which, having established some fundamental proposition by a rigorous proof, we reason *a priori* from the established law to the consequences which flow from it, from general propositions to particular cases, thus predicting the possible from the certain or the probable; and the historic or bibliographic method, in which, before attempting either of these things, we take account of stock, as it were, and find out what actually is known before presuming upon assumptions, assertions or predictions of any kind, and especially to avoid rushing into public utterance or print with statements which are gratuitous or otherwise "ancient history." This is the principal function of the bibliographic and historical method, which alone can furnish the guiding thread through the great mazes of ancient and modern literature, whether it be science and medicine, the fine arts and the drama, the law and municipal government, the whims and oddities of mankind, the psychology of the lower animals and of different human races, or the spiritual and supernatural phases of existence.

* Read at the opening exercises of the Medical College of Syracuse University, Sept. 21, 1915.

* Owing to lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

THE BIBLIOGRAPHIC METHOD

To confine ourselves to medicine, it is only necessary to mention Harvey's immortal essay on the circulation of the blood, or Beaumont's work on the gastric juice, as examples of a scientific investigation in which the inductive method was preceded by the bibliographic. Both Harvey and Beaumont prefaced their work by a careful and thoroughgoing review of all that their predecessors had done before taking hold of the problems immediately before them. The appendixes to Bretonneau's book on diphtheria, which placed this disease on its modern footing at the beginning of the nineteenth century, show that this eminent physician had carefully pondered all that the physicians of the past had to say before publishing any express views of his own, and, much to the discontent of his pupils, he held back his manuscript for six years before printing it, even as Harvey had lectured on the circulation at least twelve years before he published his essay. The consequence is that these works are true medical classics in the best sense of the term. What the authors have to say is said so well and so conclusively that it would be difficult to improve on it from the point of view of the time in which they wrote.

In the words of Augustus De Morgan:

> All the men who are now called discoverers, in every matter ruled by thought, have been men versed in the minds of their predecessors, and learned in what had been before them. There is not one exception. I do not say that every man has made direct acquaintance with the whole of his mental ancestry; many have, as I say, only known their grandfathers by the reports of their fathers. But even on this point, it is remarkable how many of the greatest names in all departments of knowledge have been real antiquaries in their several subjects.[1]

In our modern medical literature, particularly that of Germany, it has become so much the fashion to preface a monograph or *Arbeit* with a historical "introduction" that the latter sometimes seems commonplace or perfunctory. But without rendering just such an honest account to himself of what is due his predecessors, it would be impossible for any modern physician to be sure that he is saying anything particularly new or true; and there are some medical writers, as Virchow has shown, who have actually falsified their bibliographies by inserting bogus, erroneous or misleading footnote references to books and papers which they have never seen.

Aside from original investigations, much of modern medical literature, as you know, is made up of abstracts or rearrangements of the work of other men. Some of these essays have been well described as little more than extended bibliographies; others, while ephemeral, have a distinct value as mediums for fertilizing the soil of current-day medicine, bringing many complex, abstruse or recondite things down to the level of comprehension of busy overworked men who run but may not read. The only essential is that such essays should be accurate, comprehensible or attractive in style, and that their writers should honestly state the sources of their information.

In the gigantic task of cataloguing and arranging the literature for this and other purposes, medicine has been mainly indebted to the self-sacrificing labors of four men — Haller, who catalogued medical, surgical, anatomic and botanic literature up to the end of the eighteenth century, Callisen, who catalogued the books and the contents of medical periodicals from Haller's time up to the end of the first third of the nineteenth century, and Billings and Fletcher who, in the Index Catalogue, listed the whole medical literature of the world from the earliest times down to the present, by authors and subjects, and arranged that the current medical literature of the world should be accessible to the medical profession in the monthly *Index Medicus*.

It is not likely that the undergraduate student will have occasion to use the larger medical bibliographies to any extent, and then only under the direction of his teachers. Is it then necessary or desirable that he should employ the methods of bibliography in his early work? I venture to say that this could be done with some advantage, according to the industry or enthusiasm of the individual pupil. He begins his studies with anatomy and physiology. Whether these subjects be taught by lectures and class room recitations, supplemented by dissecting and laboratory work, or exclusively in the dissecting room and laboratory, he will, in any case, have to arrange and coordinate the knowledge he acquires for examination purposes or for future use in his active life. He studies, for instance, the occipital bone by means of a detached specimen and the description in Gray's "Anatomy," the ramifications of the external iliac artery or the outflow of the cerebral nerves in the cadaver, or the electrophysiology of muscle and nerve in a laboratory preparation. Suppose, now, that he attempts to write down an account of what he has seen and learned, not by the book, but from his own inner consciousness. Obviously, this is the most effective way in which he can render to himself an account of the exact state of his knowledge. For, as Lord Bacon said, "Reading maketh a full man, speaking a ready man, and writing an exact man." By oral quizzing bouts with his fellows, the student may acquire facility of expression, freedom from embarrassment, and even those evasive or prevaricating tactics which sometimes embarrass the professor; but if he is to be quite honest with himself, he will wish to keep a private account of his own knowledge for his own satisfaction. If he acquires an ordinary paper box of envelope size, and an outfit of blank cards which loosely fit into this box, or of stiff paper cut up into the appropriate size by some paper warehouse, he will have all that is necessary for accomplishing this end in any subject. If, now, he writes down on one of these cards all that he wishes to know or hopes to retain about the occipital bone, electrotonus, etc., he will have a series of nuclei for future study or work, which he can arrange under each subject in alphabetical order. At times, he may wish to rearrange or enlarge his knowledge of any one of these individual subjects. In this case, it will only be necessary to rewrite a particular card and throw out the original, which cannot be done in an ordinary student's notebook without defacing the page or making a very complex mess of it.

If one had to study medicine again, many older men would have followed this plan as a strictly labor-saving device; and while, in after life, no one would care to lumber up his domicile with piles of boxes of this kind, there are still many important facts, many odds and ends of knowledge, many scraps of information, which could be kept in this way for ready reference. Indeed, most scientific physicians working in hospitals and laboratories today do keep extensive records of this kind on card indexes of standard size, contained

1. De Morgan, Augustus: A Budget of Paradoxes, Ed. 2, Chicago, 1915, p. 5.

in special cabinet cases made for this purpose by our library bureaus.

MEDICAL HISTORY

As one learns to use one's mind through the Latin grammar and mathematical problems, as one learns to play a musical instrument by practicing scales and chords, so the medical student who works in this way will have acquired special technic for keeping his office and hospital records when he becomes a practitioner or teacher. If he wishes to keep his patients or keep in touch with them, he must keep track of them, and this is usually done, at least in important cases, by means of systematic alphabetical records. The time may come when he wishes to use such cases and records in writing a medical paper or in preparing a discussion of a paper in a medical society, and this brings up the question whether it is worth while to make these students' records historical, in the sense of adding to each record, as time or inclination permits, such historical data about the separate items as may seem of interest to the individual student. I venture to say that this would be the readiest way in which the undergraduate student can get in touch with medical history. The idea of teaching medical history in the medical curriculum by means of set lectures to the students has been tried and tested often enough and, in most cases, found wanting; mainly because the subject is so vast and complex that any attempt to present it in concise and precise form, in a few lectures, is almost inevitably dry and disappointing, unless backed up by unusual eloquence or a fascinating personality. Just on account of this dryness, students have been found to avoid such lectures, as pupils at musical conservatories are said to avoid the classes in harmony and counterpoint. The medical student, in particular, is so crowded with other subjects in his courses that the additional lectures on medical history might very well prove the last straw to break the camel's back.

One very conclusive objection to lecturing neophytes on medical history is that such lectures swarm with those unfamiliar names which as Coleridge said, "are nonconductors and stop all interest."

The very fact that most physicians, however experienced or learned, have usually taken up this subject late in life goes to show that the student would gain nothing whatever by the attempt to throw it at his head in one indigestible lump. It is usually studied in detail, and to best advantage, not by solemnly beginning with the Egyptians, the Hebrews, the Greeks and the dreary narrative down to the beginnings of modern scientific medicine in the period of Vesalius and Harvey, but by attacking the subject anywhere, in direct connection with one's actual studies, and sometimes by studying it backward.

At the Johns Hopkins University, medical history is taught directly in the laboratory and the clinic, by deliberately interweaving it point for point, or contrapuntally, as the musical theorists say, with subjects of special interest, no matter how accidentally or incidentally these may come up. If the subject is Addison's disease, or Skoda's resonance or the significance of Gaskell's experiments on the heart in heart disease, the student is expected to interest himself in the lives and personalities of these great men, and to know something about them as part of his medical culture. In this manner, he gets in the way of reading into medical history and of expanding his studies in this field through a naturally acquired interest. This is the method which was introduced by Dr. Osler and Dr. Welch, and it is also the method which has been introduced at Harvard through the influence of Dr. Cushing. Osler is said to have required his advanced students to read and report on some of the foreign medical journals and, in his evenings at home with his "boys," he brought them in touch with the cultural phases, the ethics and the etiquette of their future profession in a very delightful and informal way. Supplementary to all this is the Johns Hopkins Hospital Historical Club, at which set papers, sometimes by outside physicians, sometimes by the professors or students, are read, for the benefit of the classes and afterward discussed by Professor Welch and others. In this method, too, the centric idea is to attack the subject from any angle that may come up, and not to exploit it by the systematic, formal and chronological plan which has proved so dull and tiresome.

Every medical student should provide himself, if possible, with a comprehensive medical dictionary, of the flexibly bound kind of which there are so many good examples nowadays, and familiarize himself with the names of the great physicians as they come up in his work, especially in connection with the so-called eponyms or diseases, operations, procedures, etc., which are named after these physicians. The advantage of the eponym for the medical student lies not only in what it denotes, the particular man it stands for, but also in what it connotes, that is, the secondary idea or implication which it conveys to the mind, and this association of ideas may be extended to almost any term of importance which may be encountered during the student's medical courses. Thus, the name McDowell denotes a pioneer physician of Kentucky, but it connotes the first successful ovariotomy; salvarsan denotes a synthetic drug, but it connotes its discoverer Ehrlich and the disease in which it is used; vesicovaginal fistula denotes a certain distressing condition in women, but it should connote the name of Marion Sims, who founded operative gynecology by first treating this condition successfully; the Argyll Robertson pupil denotes a certain condition of the eye, but connotes locomotor ataxia, general paralysis and a certain Scotch ophthalmologist; the ophthalmoscope ought to suggest the name of Helmholtz or vice versa. Along such lines as these, the student might, if he chooses, begin to add little biographical or historical notes about these men to his memorandum cards, as he goes along, and he may find these historical clues not cumbersome baggage but actual aids to memory.

It is possible that the plan suggested here may sometimes prove too large a contract for the student during his periods of overwork; but if he does never so little, on the principle of *nulla dies sine linea* — a few lines every day — it will not be wasted labor. The illustrations given are very rudimentary indeed, and are based on the assumption that the student really wishes to know something of the cultural history of his profession from the start. Are there any special advantages in acquiring such knowledge? First and foremost, there is the all-important point that what we learn in youth is apt to stick by us more closely, to be a more essential part of our mental furniture, than anything we attempt to acquire in later years. The names we have heard in our medical courses, the jokes and anecdotes the professors told us, some striking clinical exposition, some impressive scene in the surgical amphitheater, remain with us forever, and many things, learned in these earlier years, which we think

we have forgotten, come to the surface again in a surprising way when we have any occasion to use them. "The knowledge which a man can use," said the historian Froude, "is the only real knowledge, the only knowledge which has life and growth in it, converts itself to practical power. The rest hangs like dust about the brain or dries like rain-drops off the stones."

Some of you, in future years, will take part in the papers and discussions of medical societies and medical congresses at which you will meet men to whom this special cultural knowledge of your profession is a matter of course. Most well-trained and well-equipped physicians of today, in fact, have this knowledge. You will not wish to meet them at a disadvantage to yourself. But, over and above this, you will not be doing justice to yourself, if you do not wish to know the broader aspects of medicine for your own satisfaction. We dislike to be burdened with new studies, but this is an essential part of modern medical training in the German and Swiss universities, at Oxford and Edinburgh, at Harvard and Johns Hopkins, at Philadelphia and St. Louis. At most of these universities, the supplementary medical history club has delightful social features, because it brings the students into closer human relations with their teachers, relations of which we of twenty-odd years ago never had the advantage. But you must do the greater part of the work yourself.

As you study the different diseases, try to learn something of the histories of these diseases in that great storehouse of knowledge, Hirsch's "Geographical Pathology," which has been admirably translated by Dr. Charles Creighton for the Sydenham Society. As you study the various drugs, learn their history from Flückiger's "Pharmacographia" and from Trousseau's great treatise on therapeutics. Learn the history of physiology from Schäfer's monumental textbook. Learn the history of the surgical operations from Gurlt, Mott's Velpeau, and Billings' monograph in Dennis' "System of Surgery." Learn the history of gynecology from von Winckel, Howard Kelly, and Allbutt's System of Gynecology. Learn the history of obstetrics from Engelmann and Whitridge Williams. The monumental histories of Gurlt (surgery), Fassbender (obstetrics), Hirschberg (ophthalmology) and Politzer (otology) are so supremely well done that they will hardly be improved on by any later hands. Meyer's "Geschichte der Botanik" is of enormous value, because it deals with the subject mainly in its relation to medicine. Organize a small library of medical history for your college, to contain at least some of these books, which will be of more practical use to you, at this stage of your career, than the long set histories of medicine, such as those of Haeser, Baas and Neuburger.

Should you wish to read medical history systematically, you will find Neuburger's, in the Oxford translation, the best of the larger and more modern treatises. Of the older systems, that of Sprengel is unrivaled for its close rendering of the facts of ancient medicine and the unimpeachable accuracy of its footnotes. Haeser is solid, dull and not so reliable, but the third volume, on epidemic diseases, is invaluable. Pagel's "Introduction" has been purged of much inaccuracy and brought up to modern standards by Sudhoff (1915). Withington and Léon Meunier are the best of the shorter histories published in England and France, respectively. The brief and little known sketches by William Farr (1839) and Edwin Klebs (1868) are highly original and suggestive. To keep track of medical events in order of time, the chronologies of Ludwig Choulant (1822), Casimir Broussais (1829), William Farr (1836-1838), M. S. Krüger (1840), Chinchilla (1844) and Julius Pagel (1908), are useful, as also the remarkably detailed chronologies of medicine in the histories of William Black (1782), Kurt Sprengel (1792-1803) and E. Isensee (1840-45). Of all these, those of Choulant, Broussais, Farr and Pagel are the most reliable. For medical biography, you may use Éloy (1778), Jourdain (1820-1825), Bayle and Thillaye (1855), Hirsch (1884-1888) and Pagel (1901); and for American names, Thacher (1828), Gross (1861), Atkinson (1878), Stone (1894), Watson (1896) and Kelly (1912); but you will find the best individual biographic references under the separate author entries in the Index Catalogue.

FINDING REFERENCES

Let us now take one or two concrete examples of the value of these tools;

You wish to find the exact bibliographic reference to some minute detail of ancient medicine. You will usually find it in the footnotes to Sprengel's "History." For example, the textual sources of the different papal ordinances governing medicine in the middle ages will be found in the footnotes at the bottom of pp. 484-485 (1823, vol. 2), and nowhere else. Sprengel is reliable for data of this kind up to the eighteenth century.

For nineteenth century books and pamphlets, use the author-titles (roman type) and for periodical literature, the subject-titles (in nonpareil type) in the Index Catalogue (1880-1915), or the annual indexes of the *Index Medicus* (1879-1915), supplemented by the superb and infallible "Catalogue of Scientific Papers," published by the Royal Society of London (1867-1915), which, when completed, will give the whole of the strictly scientific periodical literature of the nineteenth century (1800-1900), indexed by authors in alphabetical order.

To find references in the later periods, use either Callisen or the Index Catalogue.

THE LITERARY SIDE OF MEDICINE

Learn printers' marks. Acquire the proofreader's eye for errors and blunders, and study the effective exploitation of type.[3] Learn to criticize silently the syntax and style of every page you read. Remember that every modern writer who is a stylist probably became such by picking to pieces the things he perused.

Medical papers are written and published by the thousands and most of them speedily forgotten. The time may come when you have a paper for publication. An eminent medical editor once gave me his criteria for selecting or rejecting papers, not of the highest scientific order, but of mean average merit, as they were sent to his journal for publication. "I read a few pages over," he said, "and as I do so, I keep in mind two standards: Does the article rivet my attention or does the mind begin to wander away from it unconsciously? In the latter case, I invariably reject the article." Before sending your maiden effort to a medical journal, read it over critically yourself, or have some acute person read it over, to see if "the mind begins to wander." Some of you may become medical editors in time, and if so, the importance of this criterion will sink into your mind; for a writer on medicine who is inaccurate in matter is lacking in respect for his subject; if he is careless in style and manner he is lacking

3. Perhaps the most remarkable example of the effective use of different fonts of type for bibliographic purposes is to be found in Isak Collijn's catalogues of the incunabula in the University Library at Upsala (1907) and the Royal Library at Stockholm (1914), the style of which has already been copied by the Prussian commission in the specimen fasciculi of its forthcoming "Gesamtkatalog" of incunabula (Halle, 1914).

in respect for his readers and consequently for himself, like a man on the sidewalk who makes himself conspicuous by slovenly attire.

The need for medical men who will specialize in medical bibliography and history, and devote themselves exclusively to medical journalism and medical literature, is becoming more apparent every day. Advanced teachers, like Professor Cushing at Harvard, are already beginning to encourage some of their pupils to take up the literary side of medicine, as a set-off to an ordinary success as internists or surgeons exclusively.

THE CULTURAL HISTORY OF MEDICINE

Should you be able to organize a medical history club, which might meet, as at Harvard or Johns Hopkins, in one of the university rooms, or as at New York and Washington, in private residences, you will then be actually studying the subject from two different angles, the biographic and cultural in the club, and the technical in your own private work; and the little historical library you get together may prove the nucleus of a larger and more valuable medical library for the students of the future.

The variety of subjects which might be discussed in a medical history club is almost inexhaustible, for medicine touches human activity at almost every point. There have been medical astronomers, medical mathematicians, medical botanists and zoologists, medical geologists, medical novelists and poets, medical musicians, medical lexicographers, medical statesmen and political adventurers, and, in the past, clerical physicians or medical clergymen. In the Renaissance period, many physicians were astrologers and makers of almanacs. Some of the first school arithmetics ever printed were made by medical men.[4] Some phases of medical knowledge, such as the physiology of respiration or the physics of vision, were worked out almost entirely by mathematicians, physicists and chemists. Much of the earlier materia medica was made by medical botanists; many therapeutic devices of practical moment, such as the use of cinchona in malarial fever, inoculation and vaccination against smallpox, catheterization of the eustachian tube, exhibition of digitalis in cardiac dropsy, and the use of lime-juice in scurvy, were introduced in the first instance by laymen or even through the intuitions of semicivilized people. The greatest figure in modern medicine, Pasteur, was not a doctor but a chemist. Florian Heller, Hoppe-Seyler, Salkowski, Kossel, Ehrlich, Emil Fischer and Abderhalden worked out results of greatest importance to medicine in chemical laboratories.

In ancient times, the physician was a priest or the priest a physician; in the middle ages, when not a cleric, he had the status of a menial and sat below the salt; in the eighteenth century, he wore the "austere scarlet" of the clergy, or the velvet and brocade of the aristocracy, and mingled with the best; in the modern period, the age of money and money worship, he became something of a business man. Among the Greeks, the surgeon was a warrior chieftan; in the middle ages, he was a barber or bath keeper; in the seventeenth century, he was sometimes a headsman or executioner; in eighteenth century Germany, the army surgeon was called *Feldscheerer*, because he had to shave the officers of the line; in our own time, the surgeon stands at the topmost round of the medical profession and is sometimes an experimental physiologist. In the Renaissance period, the anatomist was a free thinker; in the seventeenth century, he was an experimental physiologist; in the eighteenth century, he was usually a surgeon and an illustrator of books; in the nineteenth century he became a microscopist and morphologist. The ancient Egyptians had a doctor for every disease or a disease for every doctor. Among the Babylonians, the patient was brought into the market place and any passerby could have some say as to diagnosis and treatment, if he chose. As Montaigne said, "The whole people was the physician." The same condition obtained after the French Revolution, when all the medical schools and medical societies of France were abolished by vote (1792), and any mountebank or ignoramus could qualify for practice on application.[6] The spirit of the mob has always been disastrous to medicine. Asclepiades, a Greek physician of the second century, B. C., introduced the idea that there are really no diseases but only constricted and relaxed, tonic and atonic, sthenic and asthenic states of the body, and this amazing theory was revived at least four times through the ages by Hoffmann, Brown, Broussais and Rasori, the latter two in the early part of the nineteenth century. Bloodletting, even to the point of killing the patient by exhaustion, was the standard remedy for one of these conditions, and was a disgrace to therapeutics for three centuries. Now we know, from the copious drafts of water the patients required, that the rationale of this procedure, when temperately employed, was simply to wash the blood, to relieve it of the "peccant humors" or toxins of disease. Abel surmises that the error of extensive and intensive bloodletting lay, not in depriving the patient of his blood serum, which could be supplied by the ingestion of water, but in relieving him of most of his red blood corpuscles, which cannot be supplied. One of the great aims of modern historical medicine is to get at the underlying folk intuition, in all these things. We trace the origin of internal medicine in the medicine man's solemn powwowings and incantations against the demons of disease; of diagnosis and pathology in the augur's inspection of the entrails at sacrifice, or the origin of study of the cholemic diathesis in the Babylonian terra-cotta models of the liver and the Galenic and Arabian interest in black and yellow bile. We trace the origins of operative surgery in the thorns, sharp roots and accidentally sharpened flints of the savage; obstetrics in the natural postures which, as Engelmann has shown, all savage and primitive women instinctively assume in labor.

These few trite examples may perhaps serve to indicate the interest which attaches to the cultural history of medicine, and they will at once suggest to your mind that it is not necessary to pursue the subject in the usual dryasdust way, by rule and line, piling up facts, dates and unfamiliar or uninteresting names in chronological order. This method, the bibliographic, is of great use and value in libraries and in research work, but the history of medicine itself is coextensive with the history of the human race, and only a part of the general history of human culture. Bibliographic methods will prove of immense value in keeping your private records, but, in the medical history club or possibly

4. For an account of these, see Smith, D. E.: Rara Arithmetica, Boston, 1908, passim.

6. Wickersheimer, E.: Un examen de médecine en l'an xii, Paris méd., 1912-1913, x, suppl., 749; translation: THE JOURNAL A. M. A., Nov. 29, 1913, p. 2001.

in some symposium at the home of your professor, you may, as Emerson says, "Take hold anywhere."

The gold-headed cane, St. Anthony's fire, the red and white stripes on the barber's pole, the duels of physicians, the blood suckers who attended duelists in the eighteenth century in order to suck their wounds, the wound drinks of the middle ages, the purgative inks of the Arabians, the anodyne necklaces, quassia and antimony cups of the past as compared with the medicated milks, iodated foods and diuretic wines of the moderns, cupping and leeching, the seton and the moxa, the sympathetic powder for healing wounds at a distance, the use of the bare foot as a thermometer in the middle ages, the introduction of Dover's powder by a buccaneer, the statues erected to the memory of great physicians and the streets named after them, the quacks of the eighteenth century, the medical graduation ceremony, the use of botanical gardens to teach materia medica, hex-doctoring in Pennsylvania, the medical superstitions and folk-ways of different races, any one of these subjects, taken at random as a starting point and closely studied, will throw you into the full current of medical history. It is worth while to remember, in this connection, that some of the most valuable records of historical medicine which we have are often contained in the actual scientific writings of great physicians and surgeons. Hippocrates and Celsus, Sydenham and Wiseman, Harvey and Sanctorius, Haller and Morgagni, Heberden and Lettsom, Bretonneau and Trousseau, Malgaigne, Nicaise and Gurlet, Virchow and Edwin Klebs, Osler, Welch and Jacobi, Charcot and Weir Mitchell, are saturated with medical history, if we understand by the term something which is alive and living and not a mere dead record. As an example, a paragraph from the obituary of the late Professor Minot by Professor Porter of Harvard illustrates the ephemeral status of biologic hypotheses:

> The history of thought is strewn with broken dreams. They rise like the mirage. The weary traveler, toiling through arid facts, as numerous and as unrelated as the sands of the Sahara, sees afar off the shining lakes of Theory. There, on the horizon, is that which shall fit the desert to be the abode of men. The traveler presses on. The mirage dissolves, and from afar the Sphinx, inscrutable, looks down on the immemorial sand. The biologist may dress himself tastefully in the plumage of the physiologist and the anatomist, but this will not create him a new species.[7]

There is more medical history in this paragraph than in hundreds of dull pages which give us only a detailed account of all these theories. A philosophical generalization of widest sweep is made in a way to set the mind in motion and start us thinking for ourselves; and that is how medical history has usually been written by the master physicians. "The knowledge of past time and of the position of the earth," said Leonardo da Vinci, "is the adornment and food of human minds." To know the cultural history of a great profession, his own, is a worthy ambition for any medical man. The young student who begins early may live to realize the sentiment of Thoreau:

> We should oftener look over the tafferel of our craft, like curious passengers, and not make the voyage like stupid sailors picking oakum. . . . How worn and dusty, then, must be the highways of the world, how deep the ruts of tradition and conformity. I did not wish to take a cabin passage, but rather to go before the mast and on the deck of the world, for there I could best see the moonlight amid the mountains. I do not wish to go below now.

7. Porter: Boston Med. and Surg. Jour., 1915, clxxii, 468.

THE CARBOHYDRATE FACTOR IN THE CAUSATION AND TREATMENT OF HYPERACIDITY AND ULCER

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In connection with the causation and treatment of gastric hyperacidity and ulcer, I wish briefly to mention certain observations relative to the dietetic and medical management founded on the following:

1. The great increase per capita of sugar during the past fifty years.

2. The possible relationship existing between this increase of sugar consumption and the apparent increased incidence of gastric and duodenal ulcer.

3. The influence of restricted carbohydrate diet in the treatment of uncomplicated hyperacidity and on ulcer. This excludes those in whom some remote pathologic condition may exert reflex influence on the gastric secretion, such as syphilitic ulcer, gallstones, chronic appendicitis, uterine malposition or new growth, pelvic adhesions, intestinal kinks or abdominal hernias.

So far as I am aware, Deeks,[1] in 1912, first called attention to the influence of an excessive sugar and starch diet in the causation of hyperacidity and ulcer. This article has received only scant attention, judging from the current gastro-enterologic literature. In the fall of 1913, while in Panama, I discussed with Deeks the results obtained, and examined a number of patients then under his care in Ancon Hospital. My interest in the subjects dates from that time.

Whatever may prove to be the ultimate explanation of the sequence of pathologic changes leading to ulcer formation in the stomach and duodenum, it is well recognized that hyperacidity has in probably every case, at some time, been a factor of at least contributary importance. In my experience, reflex causes in the abdomen have served as an explanation for the hyperchlorhydria and hypersecretion in at least 50 per cent. of the cases. In the remainder, a faulty dietary with an excess of carbohydrates has, I am certain, been a factor. At least this much may be said: A majority of such patients are relieved of many of their symptoms, such as hunger-pain, pyrosis and flatulence, by restricting their carbohydrate intake. When the hyperacidity and hypersecretion have existed for a considerable period of time with periodic intervals of improvement and relapse, definite ulcer is, of course, suspected. A large majority of ulcer cases are amenable to medical treatment. About 25 per cent., however, become chronic with undermined edges which show difficulty of repair. Such patients, because of the chronicity and slow repair, are given greater relief by competent surgical intervention. This does not refer to the complications such as extreme hemorrhage or perforation, many times calling for emergency surgery. Such surgical relief is indicated if sufficient appropriate medical treatment has been tried and found wanting, and if such patients have suffered seriously in nutrition as a result of their chronic dyspepsia.

According to the U. S. Department of Agriculture,[2] the annual consumption of sugar has increased three-

1. Deeks, W. E.: New York Med. Jour., Nov. 30, 1912.
2. For the figures here given, I am indebted to L. M. Eastbrook, chief of the Bureau of Crop Estimates, U. S. Department of Agriculture. The per capita consumption has been computed by adding the production of a given country to its imports and subtracting its exports. See also Bull. 66, U. S. Dept. Agric., March 10, 1914.

fold to 82 pounds per capita during the past fifty years. This has been due, in part, to cheaper production and in part to the increased taste for candies, preserving syrups, condiments and pastries. Starchy foods have also greatly increased, especially in the form of finely divided cereals from which the hull or shell of the grain has been removed. Fifty years ago, sugar was a luxury, while today it has become a necessity. The average individual feels that he must have sugar on nearly everything he eats. Modern civilization has made us a nation of sugar eaters. The consumption of sugar, per capita, in the United States in 1819 was 4 pounds, in 1821, 7 pounds. In 1912, the per capita consumption of sugar was about ten times the per capita consumption ninety years ago, that is, 82 pounds. In the United Kingdom, the average consumption in 1821 was 16 pounds per capita; in 1831, 18 pounds per capita, while in 1911, the per capita consumption was 92 pounds.

The accompanying table shows the marked increase in sugar consumption in the United States, United Kingdom, France and Germany, since 1871.

ESTIMATED AVERAGE PER CAPITA CONSUMPTION OF SUGAR IN FOUR IMPORTANT COUNTRIES *

Year	United States,† Pounds	United Kingdom‡ (Net imports), Pounds	France,‡ Pounds	Germany,§ Pounds
1871	36	44	17	12¶
1881	43	64	22	15
1891	61	78	26	21
1901	71	91	24	27
1911	77	92	39	42
1912	82.4	..	..	..

* U. S. Dept. of Agriculture, Bureau of Crop Estimates, Crop Records Division. April 30, 1915. "Consumption" includes all uses in households, in factories, and elsewhere. Figures for United States and United Kingdom refer partly to raw and partly to refined sugar; for France, figures for 1871, 1881 and 1891 refer to raw and for 1901 and 1911 to refined sugar; for Germany, figures in 1871 and 1881 refer to raw and other figures to refined sugar. This table was compiled from the Statistical Abstract of the United States; Statistical Abstract of the United Kingdom; Annuaire statistique (France), and Statistiche Jahrbuch für das deutsche Reich (Germany).

† For years ending June 30.

‡ For years ending December 31.

§ For years ending August 31.

¶ 1872.

In this connection it may be recalled that the stomach has no provision for the digestion of carbohydrates, with the result that under normal conditions a carbohydrate meal is rapidly passed through the stomach for digestion in the intestines. With a mixed meal, however, a considerable portion of the carbohydrate constituents remain during the process of protein digestion in the stomach. The gastric juice is without action on starch except to a very limited extent. Deeks has contended that an excess of carbohydrates, especially saccharose, favors bacterial decomposition during this period of protein digestion. The decomposition products which result are largely organic diffusible acids, such as lactic, acetic, proprionic, butyric and valeric acid. These products, because of their irritating character on the gastric mucosa, promote hypersecretion. This is especially true when bacterial decomposition of carbohydrates occurs as a result of the retention of starch and sugar during the digestion of the protein constituents of a mixed meal. The symptoms of hyperchymification and hyperacidity occur, as is well known, toward the end of the period of protein digestion in the stomach.

Such symptoms are supposed to be due to the fact that the stomach has emptied itself and that, in most instances, with a patulous pylorus, there remains little food to bind the acid of the gastric juice, which, according to the experiments of Carlson,[3] is continuously secreted. As a matter of fact, gastric lavage within thirty minutes after a heavy carbohydrate meal has shown repeatedly, in my hands, an excess of organic acids. It appears that the hyperchlorhydria and the hypersecretion which follows can be more rationally explained in such cases as a result of the elaboration of irritating organic acids from sugar fermentation than from any other cause. It has been rare in my experience to encounter hypersecretion or hyperchlorhydria and ulcer in diabetic patients, who, because of the nature of their illness, partake sparingly of carbohydrates.

Pawlow,[4] in his work on the "minature stomach" in dogs, found that butyric acid strongly excites gastric secretion. On the other hand, an excess of hydrochloric acid inhibits butyric acid fermentation within the organ. With an ordinary amount of carbohydrates taken with a well balanced ration under normal conditions, but little butyric acid fermentation would probably occur because of the inhibitory action of the hydrochloric acid. With a mixed meal containing an excess of carbohydrate which remains in the stomach during protein digestion, the inhibitory action is insufficient, and bacterial organic acid fermentation occurs. The monosaccharids, such as dextrose, levulose and galactose, are fermented by yeast into alcohol and carbonic acid. Lactic acid is also formed by the action of the *Bacterium lactis*. The disaccharids, such as saccharose, maltose and lactose, are not fermented by yeast but may be broken up into lactic acid by the *Bacterium lactis* or butyric acid by the *Bacterium butyricum* of Pasteur or the micrococci of butyric acid fermentation discovered by Fitz. Of the polysaccharids, starch is likewise subject to bacterial fermentation with the formation of organic acids.

Pawlow has demonstrated that the ferment digestive power and likewise the total acidity of the gastric juice varied according to the nature of the diet. The juice secreted after bread contained much more ferment than after meat, but the acidity was greatest after meat (0.56 per cent.), and lowest with bread (0.46 per cent). He found, however, that the hourly intensity of gland work was much less with bread, which means that the time required for the digestion of its protein constituents is longer and that the duration of gastric secretion is correspondingly protracted. We have, therefore, in the type of carbohydrate digestion manifested by bread and cereals a relatively low acidity with protracted secretion. These factors probably have much to do with bacterial decomposition of carbohydrates when the latter are present in excess.

In the consideration of the apparent increased incidence of gastric and duodenal ulcer during the past fifty years, it is realized that statistics may be made to prove almost anything. It is interesting to note, however, that in Bennett's "Practice of Medicine," published in 1859 (Edinburgh), a classic of its time and containing many postmortem descriptions, only one perforative duodenal ulcer was mentioned (p. 774). He says, also, "From what I have observed of postmortem examinations in the Royal Infirmary of Edinburgh, it does not appear to me that chronic

3. Carlson, A. J.: Contributions to the Physiology of the Stomach, XXI, The Secretion of Gastric Juice in Man, Am. Jour. Physiol., 1915, xxxvii, 50.

4. Pawlow: The Work of the Digestive Glands, London, 1902.

ulcer of the stomach is a common disease here." Contrast this opinion founded on a large clinical experience at the Royal Infirmary, making due allowance for improved methods of diagnosis, with the last annual report of St. Mary's Hospital, Rochester, Minn., where 302 duodenal and 169 gastric ulcers, or a total of 471, were diagnosed during 1914. It is interesting to note that the incidence of ulcer patients requiring surgical interference has increased to the greatest extent judging from the literature, in the two English speaking countries in which the consumption of sugar has been greatest during the past twenty-five years. The operative records of the Mayos, Finney and others in this country, and of Moynihan and Mayo-Robson in England seem to bear out this statement.

From a practical standpoint, patients with hyperacidity and ulcer do better with an almost starch and sugar free diet, at least during the time of active symptoms. The diet which I have recommended in the treatment of hyperchlorhydria, not due to reflex causes from remote pathologic conditions elsewhere, if these can be excluded, is as follows (none of the articles of food contain more than 10 per cent. carbohydrates, while as a rule the available carbohydrates in the vegetables of this group vary from 3 to 5 per cent.): fresh fruit pulp and fruit juices, such as grapefruit, orange, peaches and watermelon without sugar; broth, soft boiled or poached eggs, fish and chicken, broiled or baked meats, bacon, milk, tea, cream, butter, green vegetables such as asparagus, spinach, cauliflower, watercress, endive, squash, carrots, turnips, lettuce, fruit and lettuce salads with olive oil dressing containing a very small amount of lemon juice, Brazil nuts, pecans or filberts. The following are prohibited: candy, sugar, syrups and condiments; the fresh fruits which contain more than 10 per cent. carbohydrates, such as apples, pears, bananas, cherries, currents, plums; of the vegetables, peas, parsnips, baked beans, potatoes, green corn, the cereals, boiled rice, macaroni, bread, crackers, cocoa, chocolate, and coffee.

If the symptoms do not rapidly subside by thus restricting the intake of carbohydrates, and if hypersecretion persists, a glass of milk is administered between meals and a powder consisting of magnesium oxid (calcined magnesia) and sodium bicarbonate, of each 20 grains after each feeding. Bismuth subcarbonate may be added to the powder if diarrhea is present. It is, of course, difficult to rid the stomach of the bacteria of starch and sugar fermentation, and if the organic acids persist, as evidenced by flatulence and pyrosis, gastric lavage may be employed, a liter of a weak solution of salicylic acid 1:1,000 once daily, one hour before the principal meal, being used.

In the treatment of active ulcer, rest in bed is secured and rectal alimentation carried out during a period of three or four days, or until vomiting or signs of hemorrhage have ceased. A liquid diet is then begun, consisting of albumin water and fruit juices without sugar, milk and broth, administered in small quantities of 2 or 3 ounces every two hours. The medication consists of bismuth subcarbonate, magnesium oxid, and sodium bicarbonate. An alkaline water, such as the artificial Vichy, is also used. When signs of tolerance are established, the quantities are increased until usually after a week or ten days the patient is gradually allowed to take the softer articles of the diet outlined above. Stress is laid on the feeding of small quantities at frequent intervals, usually from one and one-half to two hours, since the hypersecretion seems to be diminished by such a plan. If the patient is suffering seriously from starvation and malnutrition, commonly ascribed in general terms to "acidosis," and especially if surgical intervention is contemplated, more or less continuous enteroclysis by the drop method is used. The solution consists of ordinary tap water containing 1 ounce each of dextrose and sodium bicarbonate to the quart.

Attention to the coexisting constipation is important in the general treatment of hyperchlorhydria and chronic ulcer. The plan which has given me most satisfaction has been the use of liquid petrolatum with fruit juice once or twice daily, together with copious water drinking and attention to regular habits. The important point in the medical treatment of hyperchlorhydria and ulcer appears to be to decrease the intake of sugar and starchy foods and to use such means as will limit bacterial decomposition in the stomach. The essential point I wish to bring out is that organic acid decomposition of sugars and starches appears to play an important rôle in the production of hyperchlorhydria and its sequelae.

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THE EPIDEMIC OF TYPHUS EXANTHEMATICUS IN THE BALKANS AND IN THE PRISON CAMPS OF EUROPE*

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The epidemic of typhus exanthematicus which spread over Serbia from December, 1914, to the end of July, 1915, was, in proportion to the territory involved and the population affected, the most severe that Europe has ever experienced. The spread of this epidemic from the Danube to the Greek boundary, involving every hospital, prison camp, soldiers' barracks and almost every home, was due entirely to preventable causes, to inexcusable indifference on the part of the Serbian civil and military authorities, and to carelessness which amounted to crime.

It is impossible to tell how many were afflicted with this disease, as there are no reliable statistics available. The military reports do not include the civil population and those who were ill and died of this disease unattended by physicians where no diagnoses were made. Conservatively, one out of every five of the two and a half million population was attacked by typhus, and 135,000, including 30,000 Austrian prisoners, died of typhus during this epidemic. The hospital mortality ranged from 19 to 65 per cent. No part of the country escaped, and every city, town and village in Serbia contributed to the morbidity and to the consequent mortality.

The unreliability of the estimates in this epidemic is further increased by the fact that the Serbian physicians classified typhoid fever as typhus abdominalis, relapsing fever as typhus recurrens, and typhus fever as typhus exanthematicus, and they used the term

* Read before the Section on Public Health and Medical Science of the Pan-American Scientific Congress, Washington, D. C., Dec. 28, 1915.

"typhus" vicariously to indicate any one of these three diseases. Lack of physicians in hospitals and among the civil population caused the diagnosis of typhus to be made in almost any case with increase of temperature, and was given as the cause of death in many cases in which it did not exist.

The word "typhus" covered a multitude of sins in diagnosis, as well as a world of ignorance and carelessness. This does not apply, however, to the better hospitals under Serbian control, or to those managed by the American Red Cross units, or to Red Cross missions sent from other countries.

INCIDENCE AND TRANSMISSION OF TYPHUS

Typhus is transmitted by the louse. The body louse is completely incriminated, the head louse probably so, and the crab louse not at all. While no human experiments were made in Serbia, still the observations made in those cases of typhus occurring in hospitals and private homes gave no evidence that the disease is transmitted in any other manner than through the bite of the infected louse. Measures looking to the eradication of lice from people and from their habitations, the improvement of personal and community cleanliness and hygiene, and the isolation of people afflicted with the disease, within a short time placed the epidemic under complete control. Like cholera, typhus is one of the easiest infections to prevent, and should it creep in, it is one of the easiest to eradicate when conditions favor, and when our present knowledge of the control of the disease is scientifically applied. It is essentially a disease of winter months, and no sanitary measures at present known are better or more efficacious than warm weather and sunshine, when the poor can leave their crowded quarters for the open air, and when bathing can be accomplished frequently, when clothing can be washed and changed frequently, and when lice leave because of the heat which they cannot endure. As the colder months, with their congested conditions, immediate want and squalor, are ideal conditions favoring a typhus epidemic, so warm weather, accompanied by the sunshine, which permits the population of homes and communities to seek more hygienic living conditions, to take better care of their clothes and persons, and to destroy the lice with which they have been infested, are the conditions which favor the control and eradication of this disease. Want, squalor and the overcrowding of people, soldiers and prisoners afford conditions which are ideal for the breeding of lice and the propagation of this dangerous infection, where the facilities for bodily cleanliness and personal hygiene are denied, where filth and squalor exist and is added to by each incoming guest, and when the climate is so severe that heavy clothing with infrequent changing is imperative.

Typhus has an incubation period of about fourteen days, probably a little under fourteen days than a longer period. Eruption follows the onset closely, and reaches it maximum intensity on the fifth day. It is during this five day eruptive period that the presence of the infected louse becomes dangerous to the non-immune; after this period of the disease and during the convalescence, there is little or no danger of the louse becoming infected after feeding on the patient. The disease reaches its climax, and if death does not ensue, a long and difficult convalescence is experienced. The mental distress and disturbance, often serious in character, invariably follow. Gangrene of the extremities, at times necessitating amputation, complicates convalescence. Severe emaciation attends the convalescent stage, and a general neuritis is often noticed. The disease seems to be a general septicemia, but nothing has been discovered at necropsy to throw any light on the pathology of this disease, with the exception of the recovery from cultures taken from the spleen of an organism resembling the Plotz organism.

Sex influences the incidence of typhus. Adult males are particularly susceptible; adult females form a very small percentage of those infected, and a still smaller percentage of those who die of the disease. Usually the disease when attacking females is mild in type, and the severe sequelae which follow the disease in males is not noticed among the females who have suffered from this infection. Children are seldom attacked. The greater opportunity which women and children have, and which they exercise, for the cleanliness of their clothes and persons, and which men, especially soldiers on campaign and prisoners in barracks, are usually deprived of, undoubtedly affords protection to the weaker sex; so also those who live in sanitary surroundings, and who have an opportunity to live in comparatively good hygienic conditions, are equally protected.

With proper precautions, large numbers of those who are not immune can live in the midst of a typhus epidemic and escape the disease. In Monastir, during the period of the epidemic, our American missionaries maintained a school and orphanage having an attendance of 140 pupils. Their school is located in the center of the city and within a stone's throw of four of the largest hospitals, accommodating at one time 3,000 typhus patients. In addition, typhus was present in the homes of many of the immediate neighbors, and the teachers in this school and the senior pupils visited the hospitals regularly two or three times a week, to minister to the sick, and yet there was not a single case of typhus among the pupils or faculty of this school. In Belgrade, a foundlings' home, containing forty children, is located just across the street from the civil hospitals, and Dr. Ryan's Red Cross Hospital, where thousands of cases were treated in the course of the epidemic, and no case of typhus occurred in this orphanage. The insane asylum in Belgrade, containing 180 males and 150 females, is located adjacent to the civil hospital, and is separated from it only by a high stone wall. The inmates of the asylum performed manual labor in and about the hospital grounds, yet during the entire epidemic only four cases of typhus occurred in the asylum, and the progress of the epidemic was immediately checked.

THE EPIDEMIC IN SERBIA

Only where the conditions for hygienic living were provided did the Serbian people escape. All classes and professions were affected. The medical profession in Serbia suffered more from the disease and consequent mortality than any other profession, in proportion to its number. Overworked and exhausted by the endless labor of caring for their sick, these civil heroes lost 160 of their number out of a total of 340 at the beginning of the war. To these self-sacrificing men and women a glory as great as any gained on the battlefield or in fire shelled trench is due. They spared themselves not, they spared no effort and no labor, but worked until exhausted and the disease attacked them. Among our own American physicians who went to the aid of the stricken people of Serbia, five died, two of whom, Drs. Donnelly and MacGruder, were

members of the American Red Cross units. The nurses did not escape; they too performed heroic deeds, and in one of our Red Cross units eleven out of fourteen were stricken with typhus; happily none of them died. The physicians and nurses which other countries sent to Serbia suffered as heavily.

The conditions for the spread of the epidemic in Serbia were ideal. During the Balkan War, typhus had invaded Serbia and had never been completely eradicated. Here and there scattered through the country, especially in the northern districts, were sporadic cases, and from these foci of infection the epidemic had its origin. The people were exhausted from previous wars; they had been invaded by a large army, and the civil population had retreated as the army fell back. Belgrade in normal times has 100,000 people; during the war only 30,000 remained. The smaller cities and villages in central and southern Serbia soon became congested and overcrowded. The lack of bathing facilities in the homes of the better class of Serbians, their entire absence in the homes of the middle and poorer classes, the crowded conditions in which they were forced to live, the cold months of the winter, all favored the intense spread of the epidemic which had started. Then came their military success. The Austrian army was thrown back through the invaded territory and across the Save River, and 70,000 Austrian prisoners were taken captive. These prisoners, starved, exhausted and vermin infested, were distributed in the little cities and villages of central and southern Serbia, thus further increasing the already overcrowded conditions.

In December, 1914, a sick soldier was sent to his home in Belgrade and was confined to his bed for three days before a physician was called and a diagnosis of his case made. His home was in one of the thickly populated quarters of Belgrade, and many of the members of his family, and his curious but well meaning neighbors, visited him during this period of his illness. When a physician was called the patient was found to be in the fourth or fifth day of the eruptive period of typhus. No effort was made to isolate or quarantine this patient, and people were permitted to visit the patient as before until he died. Within two weeks in this particular section of the city, dozens of cases of typhus developed, and the epidemic spread through all quarters of the city.

In six months it was estimated that 7,000 cases of typhus occurred in the city of Belgrade alone, the civil hospital caring for 1,850 of them, with a mortality of 19 per cent., which was the lowest hospital mortality of which I know in any hospital in Serbia. At the same time in other cities of Serbia, among soldiers, prisoners and the civil population, the epidemic was increasing at a fearful rate, and by the middle of January practically the whole of Serbia was involved. The overcrowded conditions in the hospitals in northern Serbia led the Serbian authorities to distribute the surplus sick suffering from typhus among the hospitals in the cities and villages of central Serbia and Macedonia, in many instances infecting cities in which the disease had not existed up to that time. Owing to lack of room in hospitals, soldiers and others connected with the army becoming infected with typhus were sent to their homes in whatever part of Serbia they might live, in this manner carrying the disease broadcast with them.

From this time there was no possibility of controlling the epidemic with such means as the Serbian authorities had at their command. Such efforts as were made by the medical authorities were feeble and unavailing; indeed, the epidemic had grown to such proportions that the entire time and labor of the few physicians in Belgrade and throughout Serbia were devoted to waiting on those already infected with the disease. The Serbian authorities lacked organization, capacity and direction, and the most inexcusable and unexplainable things were permitted to be done by them. Trainloads of typhus patients were sent from northern Serbia to all parts of the country, even to the extreme southern boundary, in this manner invading many localities with the infection which were comparatively free from the disease. The cities in which the few cases of typhus had already made their appearance might have been protected by prompt isolation, disinfection and efficient quarantine. All these measures were entirely neglected. Their hospitalization was miserable. The regular hospital establishments were too few in number and of too small capacity to accommodate those who had been wounded or taken ill during the military campaign, and schools, colleges and public buildings of all kinds were hurriedly converted into emergency hospitals, to accommodate those who were becoming infected with typhus. Two beds were placed side by side together and a single mattress placed over them, in this manner affording accommodation for three patients where only two could have been accommodated before. No wards were segregated for the special use of treating typhus patients, but the incoming patients were scattered indiscriminately throughout the hospitals in whatever section or ward an empty place could be found. Often a patient suffering from typhus in the active stage of the disease was placed between two patients on the same bed who were not suffering from the disease, and in the due course of time all became infected. Every hospital became a hotbed of infection. Few of them had anything like sanitary arrangements, and in them only military patients were accommodated.

The civil population was almost entirely neglected; only such attention in a professional way was given to patients in their homes as could be given by physicians already overworked by their duties in the military hospitals. In one section of Macedonia, containing a population of 250,000 people, there were only eight physicians, all of whom were attached to the military service, and not a single one was left to give any attention to the civil population. Hundreds of new cases were reported daily, and the deaths reached an alarming total. The people, long inured to hardship and misfortune, became disheartened and discouraged at the fearful danger that was threatening them with extermination. Starvation and squalor added their terrors to the frightful picture, and the people were without hope.

WORK OF THE RED CROSS

It was amid such surroundings and at such a time that the American Red Cross Sanitary Commission and the commissions sent by the governments of England, France and Russia arrived in Serbia during the month of April, and began their energetic campaign to combat and control the disease. There were never more favorable conditions for the spread of an epidemic than those existing in Serbia at this time. With these commissions came what was far more valuable to the suffering people and far more effective in the control of the disease — the warmer weather and the sunshine. With every warm day the disease lessened.

The people left their crowded homes, the prisoners were permitted to leave their congested barracks, and the soldiers had greater and more opportunities and time for the promotion of personal and community cleanliness. These new conditions, aided effectively by the activities of the American Red Cross Sanitary Commission, under the energetic, experienced and versatile director, Dr. R. P. Strong, soon placed the infection in that portion of Serbia which was assigned to the American Red Cross Sanitary Commission for the field of its labors under good control, and a few weeks later the disease was completely eradicated.

Serbia, for the purposes of controlling the epidemic, was divided into four sections; the northern and eastern sections were assigned to the French and Russians, respectively, the central section was assigned to the English, and the southern, comprising practically half the area of Serbia and many of its larger and more important cities, was assigned to the American Red Cross Sanitary Commission. Immediately after arrival, the Americans began their campaign in Uskub, Veles, Prizien, Pristina and Monastir; and while on the first day of May there were 3,000 cases in Uskub, 1,500 in Veles, 1,000 in Prizien, 1,000 in Pristina, and 2,000 in Monastir, three months later, August 1, there were not a dozen active cases in all of these cities or in the remaining parts of Macedonia.

The measures taken by the American commission consisted in fumigating all hospitals, barracks, schools, and other foci of infection. The patients in the hospitals were bathed with soap and water and kerosene, and their clothes were disinfected by steam at a temperature of 115 C. (239 F.) for thirty minutes. After this process the patient was returned to a clean and vermin-free ward. This process was repeated as necessary. Soldiers and prisoners in barracks were bathed and their clothing disinfected in a like manner. Houses in which typhus was present were fumigated, and the patients were quarantined and isolated, or removed to the typhus lazarettos connected with the local hospitals. A general sanitation of towns and cities was instituted, bath-houses were built, sewers were constructed, and proper disposal of sewage and garbage was insisted on. Emergency hospitals were abandoned as rapidly as possible, and patients suffering from typhus were segregated and sent to hospitals or wards especially dedicated to the treatment of these cases. General sanitation and hygiene were insisted on throughout the territory, and conditions rapidly improved. With the coming of the warm months of summer the disease disappeared, and it is worthy of note that it disappeared coordinately in all parts of Serbia, in those districts in which the missions from other countries were laboring, to the same gratifying degree as in the district to which the American Sanitary Commission was assigned. Only in the thickly populated districts of northern Serbia was an isolated case here and there reported, and it does not seem to have been completely eradicated in this territory. In the event that conditions such as existed during the past winter repeat themselves during the coming winter, Serbia, or at least the northern part, will again experience an epidemic of typhus.

PREVENTION OF SPREAD TO NEIGHBORING COUNTRIES

As magnificent as were the results which attended the labors of the American Red Cross Sanitary Commission, not less worthy of credit, and certainly more marvelous, were the accomplishments of the countries bordering on Serbia, in keeping the disease from getting a foothold within their borders. A number of cases, probably a thousand or two, were reported in those parts of Austria-Hungary adjacent to Serbia, but the epidemic was not permitted to spread, and after a time was eliminated entirely in the localities in which it had made its appearance.

In Roumania, which is the highway of travel between Serbia and the southern part of Europe and Russia, the energetic measures taken in the quarantine station at the Roumanian-Serbian border completely prevented the entrance of the disease into this country.

Bulgaria, with its highly developed corps of physicians and sanitarians, which bounds Serbia for almost its entire length on the east, and which is another highway of communication between southern and western Europe, succeeded in preventing any typhus from crossing its boundary line.

The most creditable of all, however, was that of the Greek physicians and quarantine officers and sanitarians. Greece bounds Serbia on the south, and since the beginning of the war the only communication which Serbia had with the rest of western Europe and America was through the port of Saloniki, a city of 200,000 people, with an additional 40,000 refugees of all classes, located in buildings and barracks within and about the city. Saloniki is connected with Serbia by two lines of railroads, and the old Via Romana highway affords another means of communication between Monastir and Saloniki. Hundreds of thousands of people traveled in and out of Serbia through this port, and were exposed constantly to the disease while in Serbia during the lifetime of this epidemic; yet such were the carefully executed measures established by the Greek quarantine officers and sanitarians, that less than 200 cases were reported in Saloniki and in the remaining cities of Greece while the epidemic in Serbia existed. At each point of entrance into Greece, the Greek authorities had instituted quarantine stations equipped with disinfecting plants and isolation wards, and every passenger on every train, and every one crossing the boundary line on foot or by conveyance of any kind, was stopped at these stations, examined by competent quarantine physicians, his clothing and baggage disinfected, and all suspicious cases with increase of temperature, due to any cause, held for an incubation period of fourteen days before being permitted to continue the journey into Greece.

Any traveler from Serbia or Saloniki, or any other city in Greece, was again examined by a physician, who issued him a card on which were blanks for the recording of temperature for the five succeeding days, and under heavy penalty for failure to carry out the instructions, the traveler was ordered to report daily to the local physicians for the recording of his temperatures. In the city of Saloniki, where a majority of the cases reported made their appearance, the authorities handled the situation in a correct and scientific manner. Every case in the city with rise of temperature from any cause was reported to the health officer, who held the attending physician to a strict account for the faithful reporting of progress and diagnosis in the case.

In any case of doubtful diagnosis, expert professional advice from the health office was tendered without charge to the patient, and in case a diagnosis of typhus was made, the patient was called for by an ambulance, taken to a central disinfecting plant, where his clothes were taken from him and disinfected in an autoclave, the patient given a hot water, soap and

kerosene bath, his hair cut, and new hospital clothes given to him, and in a different ambulance from that which conveyed him to the disinfecting station, he was removed to a typhus lazaretto located at the edge of the city, and there remained until his recovery. He was not permitted to receive any visitors or any article sent from the outside, and was waited on during his illness by a competent force of physicians and hospital attendants. The feat which these efficient sanitarians accomplished in preventing the epidemic from gaining a foothold in their city, which was at that time the greatest and busiest port in the Levant, is a wonderful demonstration of what proper hygiene and sanitation will do.

THE CARE OF PRISONERS

Among the problems which confront all the countries engaged in this war are the care, treatment and preservation of the health of the prisoners which they take captive. These men, brought together from all parts of the world, and suffering all the hardships of long and arduous campaigns, under the most unfavorable living conditions, especially when engaged in trench warfare, are, when they are taken prisoners, usually in a state bordering on starvation, exhausted in mind and body, and almost without exception vermin infested. To the country which takes these men captive comes the great problem of preventing the bringing in of contagious and infectious diseases, which threaten the health and lives not only of other prisoners, but also of their own soldiers and civil population. So far as typhus is concerned, these countries handled the situation with wonderful success.

One of the countries having upward of 2,000,000 prisoners, and in which prison camps accommodating forty or fifty thousand prisoners are not unusual, has succeeded in keeping typhus from coming in, excepting in one or two camps. In the camps in which the epidemic has occurred, it has been controlled with a minimum degree of sickness and loss of life. Their methods for controlling this disease are simple but very effective when consistently carried out. On the entrance of a number of new prisoners into any prison camp, they are immediately isolated in a section of the camp separate from the remaining barracks, for a period of fourteen days. On admission to these isolation barracks each prisoner has his hair cut, is taken to a central bath-house, disinfecting plant and laundry, located in the center of the isolation compound, where he is bathed with cresolized soap and water, and afterward with kerosene, during which process his clothes are disinfected with live steam at a temperature of 135 C. (275 F.) for twenty minutes. After his bath his clothes are returned to him and he departs from the building through an exit in the rear of the bath-house. This process is repeated during the fourteen day period every four or five days. At the end of that time the prisoners are mustered for personal inspection by the prison physicians, and if they are in condition they are sent to their permanent barracks in the other compounds.

In the event that any case of infectious disease occurs in any part of the prison camp, the patient is at once removed to a well equipped hospital attached to the prison, and is there isolated and quarantined until he is free from danger to the other prisoners. The American Red Cross Commission, sent to Germany for sanitary work in the prison camps in that country, personally inspected camps in which there were 125,000 prisoners. They mustered, for personal inspection of clothing and persons, hundreds of prisoners of different nationalities in the different camps; they personally inspected hundreds of barracks in which prisoners were quartered, and thousands of beds and bunks on which the prisoners slept, and not a single louse or bedbug was discovered. This demonstrates the wonderful care and application which the authorities of this government use in preventing the incidence of contagious diseases of any sort among its prisoners, and illustrates most forcibly what energetic and correct measures will accomplish when scientifically applied in the prevention of infection.

The greatest hotbed of typhus and other infections existing in Europe before the outbreak of the epidemic in Serbia was in Galicia and Poland, along the Russian battle front. With the overrunning of these two immense provinces by the contending armies, the danger from the spread of the disease to the remaining parts of Europe became greater and more apparent each day. When finally the Russians were driven back beyond the borders of Galicia and Poland, and the current of travel between important points of these two provinces again began to flow, it became necessary for the German and Austrian governments to make great preparations and take the most effective measures to prevent the ingress of infection. On this front is built what the Germans call a "louserin," which was completed at a cost of 5,000,000 marks, ($1,250,000), and was paid for out of the private fortune of the German emperor. To this great establishment all persons, of whatever age, nationality or rank in life, going from Germany into Poland or Galicia, and from those provinces returning into Germany or Austria, are sent and are detained for five days, during which period they are bathed daily, and their clothes disinfected in large autoclaves with each bath. At the end of the five day period each traveler is given a personal examination, and on being found to be free from disease or vermin, is given a certificate which permits him to continue his journey across the frontier. No exception is made in the case of any traveler, no matter what his rank or station in life may be, the imperial family being just as amenable to the rules of this great establishment as the poorest subject of Poland or Germany.

DISEASES COMMUNICATED BY FLIES AND OTHER INSECTS

In Serbia, in addition to typhus, relapsing fever, which is transmitted by the bedbug, was prevalent in large numbers. The sanitary methods applied by the American Red Cross Sanitary Commission in combating the typhus epidemic went very far toward the elimination of relapsing fever, especially the fumigation and disinfection of barracks, hospitals, beds and clothing. It did not disappear with the approach of summer, but decreased to a very great degree. Typhoid fever was constantly present — not in epidemic form, but in sufficient numbers and covering a sufficiently wide range of territory to become a serious problem. The cities and villages of Serbia, without exception, are built on rapid running streams, usually on both banks of the river, which serves the common purpose of sewer, bath, laundry and drinking water supply. Only the fact that the water which supplies these streams comes from the mountains, and that generally the streams are rapidly running over gravelly beds, and the water has a tendency to purify itself quickly, is a greater incidence of water-borne diseases prevented.

The fly problem is always serious, and the natural habits of the peasants and their living conditions all tend to the increase of fly breeding. Manure of all sorts is carefully saved for the fertilization of the fields, and other purposes. Human and animal feces is carefully conserved, mixed with straw enough to hold it together, made into large circular cakes, and pasted against the outside walls of the habitations of the people, there to remain until dry and hard, and in this condition to be carefully saved for fuel purposes during the succeeding winter. Every house, every alley, every street, every place, was a breeding place for flies, and typhoid fever has probably been one of the current diseases in Serbia and Macedonia for generations.

The country is farmed by irrigation. Every valley has its mains and laterals running through it, all the ditches grass-grown and shaded to prevent evaporation, affording ideal places for the breeding of mosquitoes. Malaria, during the months of July, August, September and October, is prevalent to an unusual degree. It is peculiarly pernicious in its forms, and I know of more deaths resulting from malaria infection in Serbia during the six months I was present there than occurred in Panama during any one of the nine years of the American occupation.

In addition to all these diseases, Uskub and other cities of Serbia experienced epidemics of pappataci fever — a three or four day fever, not fatal in character, communicated by the pappataci gnat, which is prevalent along the Adriatic shores and in this section of the Balkans. The patient suffers severely from headaches, back and body pains, and congestion of the conjunctiva, throat and nasal passages, and has a temperature of 104 F. for two or three days, which then subsides, and a rapid convalescence ensues. The treatment for this fever is purely symptomatic; no measures have been discovered other than general sanitation and hygiene to combat this disease.

Cholera did not make its appearance in Serbia during the past year.

TREATMENT OF TYPHUS

The treatment of typhus fever is unsatisfactory. It is supportive and symptomatic in character. The use of the serum prepared by Nicolle, or the vaccine prepared from the Plotz organism, seems to have a tendency to abort the disease, and seems to have a therapeutic value. Plenty of water should be given to the patient, and a saline infusion should be constantly at hand for use at any period succeeding the eruptive stage and the climax of the disease. The severe emaciation which attends all these cases should be carefully managed. The diet should be carefully selected and carefully administered, and every precaution to support and stimulate the patient judiciously should be taken. The nervous and mental systems, which are very much disturbed, should be carefully cared for, and this disturbance, often continuing for six months following convalescence, should never be neglected.

The prophylactic measures which were employed in Serbia by the American Red Cross Sanitary Commission, and those which are used in the prison camps in Europe and in the quarantine stations of the countries bordering on Serbia, afford an effective prophylaxis in this disease. The value of the Plotz vaccine in immunizing against typhus infection is problematic. It probably has a value which will be fully demonstrated before typhus is eliminated from the Balkans. It was interesting to note that out of two or three hundred people not immune to typhus, who found it necessary to go to this part of Europe during the epidemic, all of whom were inoculated with the Plotz vaccine, among which number were all of the members of the American Red Cross Sanitary Commission, with but one exception, and the members of the mission which Columbia University sent to Serbia, and many others who were exposed at some time or another to a greater or less degree to the infection, not one case of typhus developed.

CONCLUSION

The lessons which this epidemic teaches is particularly valuable to the sanitary world, especially to those localities which are from time to time subject to an epidemic of typhus fever. It demonstrates beyond any question of a doubt that the disease can be kept out of a country by instituting proper quarantine and sanitary measures, and by the proper observance of personal and community cleanliness and hygiene. It has demonstrated with equal certainty that if it should at any time secure a foothold in any locality, it can be easily limited and eradicated in a short time. With our present knowledge of the measures which control this disease, we can take a very optimistic view of the future, and assert with confidence that the epidemic of typhus which Serbia has so recently experienced is probably the last one which will occur in Europe, unless conditions favoring an epidemic are worse than ever before existed in the history of the continent.

STRONTIUM SALICYLATE*

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The salicylate of strontium has had a therapeutic reputation for which there is no satisfactory foundation discoverable. It has enjoyed a vogue that is largely due to the propaganda of manufacturers rather than to the writings of any experimenters or carefully observing clinicians. The literature on strontium is quite meager and not at all convincing. The standard works on therapeutics are quite uniform in the statements regarding the use of strontium, so uniform in fact that it suggests the probability that they are from the same original source and that strontium has been "lugged along" from one edition to another from no well established starting point. For instance, Wood[1] says:

> The strontium salicylate, nonofficial, is a valuable compound, which slowly yields up its salicylic acid in the alimentary canal, and has the great advantage of being much less apt to derange the digestion. It is, however, too slow in its influence to be used when a quick, powerful effect of the salicylates is desired.

Hare[2] says:

> The salicylate of strontium is a valuable preparation, because it is not so disagreeable to the taste as the corresponding salt of sodium; and more important still, it is far less apt to disorder the stomach than salicylic acid itself or any of its other salts. The author has found it for these

* From the Medical Service, Lakeside Hospital.
* The subject of this research was suggested by the Committee on Therapeutic Research of the Council of Pharmacy and Chemistry of the American Medical Association.

1. Wood, Horatio C.: Therapeutics: Its Principles and Practice, Ed. 11, p. 582.
2. Hare, Hobart Amory: Text-Book of Practical Therapeutics, Ed. 11, p. 428.

reasons very useful in acute articular rheumatism when the progress of the patient was delayed by the inability of his stomach to retain the ordinary antirheumatic remedies. The salicylate of strontium is best given in capsule or cachet, and should always be followed by a draught of milk or water to prevent its coming in contact with the stomach in too concentrated form. The dose is, for all practical purposes, identical with that of the salicylate of sodium.

Strontium itself is acknowledged to be inert, although it was at one time asserted to be "valuable in Bright's disease."

Wood and Arnold[3] found that only minute traces of any strontium salt appear in the urine when given internally, and that no salt of strontium is absorbed from hypodermic injections.

As to the salicylate of strontium, the same experimenters can be quoted. Horatio C. Wood[4] says:

> In the experiments of Wood and Arnold it was found that when a solution of strontium salicylate was added to the 0.1 per cent. solution of hydrochloric acid practically all of the salicylic acid is at once set free. Also, that when strontium salicylate is given to man the urine in an hour contains much of the acid, but only a trace of the base. As the 0.1 per cent. hydrochloric acid solution is considerably less acid than is normal gastric juice, it is evident that the strontium salicylate is at once decomposed in the stomach, and that the strontium acts almost solely as a carrier. There is reason for believing that the strontium is a feeble antiseptic, and that when in the alimentary canal it acts favorably on the digestive glands and muscles, so that in the case of the official salts, strontium bromid, strontium iodid, and the nonofficial strontium salicylate, the base is useful as a carrier which yields the substance with which it is in combination to absorption and at the same time improves digestion.

Beyond this and one or two similar statements, very little can be found favorable to strontium even as a carrier for salicylic acid. Obviously the only claim clinically and experimentally for strontium is that it modifies favorably the action of the anion — especially its action on digestion.

The claim or impression that strontium diminishes digestive disturbance and perhaps slows or moderates absorption could be well tested on the salicylate. The actions of the salicylate ion are so definite, and have been so extensively studied, quantitatively as well as qualitatively, that any differences in the effects could be easily discovered.

It was with the hope of finding if strontium salicylate was any different therapeutically from any other salicylate, taken internally, that it was used in the medical wards at Lakeside Hospital for this report. It was used in the treatment of rheumatic fever, tonsillitis, and endocarditis mainly, in the same wards and practically under the same conditions obtaining when observations were made on the toxicity of salicylates as reported by Hanzlik.[5] In all cases the patients were above 12 years of age, and the drug was given in 20 grain doses combined with an equal amount of sodium bicarbonate, hourly, until symptoms of intoxication appeared. The bicarbonate was added, since this is the routine practice of the service with sodium salicylate, and was therefore necessary for the purposes

TABLE 1.—SUMMARY OF TWENTY-THREE CASES TREATED WITH STRONTIUM SALICYLATE IN COMBINATION WITH EQUAL AMOUNTS OF SODIUM BICARBONATE

Name	Age	Sex*	Diagnosis	Dosage				Antipyresis	Relief of Pain	Diaphoresis	Ear Symptoms	Gastric Symptoms	Delirium
				Total Grains	Grains	Interval	No.						
S. S.	24	♀	Acute articular rheumatism	280	20	1 hr.	14	Marked 3.5°	Marked	Marked	Ringing deafness	Nausea and vomiting	Slight
D. M.	20	♀	Gonorrheal arthritis	100	20	1 hr.	5	1°	Slight	Slight	Ringing deafness	Nausea and vomiting	None
F. M.	25	♀	Sciatic neuritis	140	20	1 hr.	7	0.5°	Very slight	None	Marked tinnitus	None	Marked
S. S.	34	♀	Acute articular rheumatism	380	20	1 hr.	19	1°	Marked	Marked	Distinct deafness	Slight nausea	Talkative and hilarious
J. R.	16	♀	Acute articular rheumatism; acute endocarditis	260	20	1 hr.	13	3°	Marked	Marked	Slight	Very nauseated	Slightly irrational
M. N.	16	♀	Acute endocarditis	500	20	1 hr.	25	1.5°	Marked	None	Marked	Slight nausea	None
M. L.	22	♀	Erythema nodosum	180	20	1 hr.	9	None	None	.....	.....	Nausea	None
R. S.	14	♀	Cervical adenitis	180	20	1 hr.	9	Slight	Slight	.....	.....	Nausea	None
M. M.	48	♀	Lobar pneumonia	160	20	1 hr.	8	Slight	Slight	.....	.....	Nausea	Slight
E. M.	16	♀	Chronic arthritis	220	20	1 hr.	11	None	Slight	.....	.....	Nausea	None
M. R.	15	♀	Chronic endocarditis	200	20	1 hr.	10	None	None	.....	.....	Nausea	None
M. G.	27	♀	Acute articular rheumatism	220	20	1 hr.	11	Slight	Marked	.....	.....	Nausea	None
A. G.	15	♀	Chronic endocarditis	140	20	1 hr.	7	None	None	.....	.....	Nausea	None
I. J.	19	♀	Chronic endocarditis	140	20	1 hr.	7	Slight	None	.....	.....	Nausea	None
G. P.	26	♂	Acute articular rheumatism	300	20	1 hr.	10	Marked	Marked	Slight	Tinnitus; deafness	Nausea	Slight
G. P.†	26	♂	Acute articular rheumatism	200	20	1 hr.	10	Slight	Slight	Slight	Tinnitus; deafness	None	None
I. S.	26	♂	Acute rheumatic myositis	140	20	1 hr.	10	2°	Marked	None	Slight deafness	None	None
F. M.	14	♂	Acute articular rheumatism	120	20	1 hr.	6	None	Marked	None	.....	Nausea	None
J. C.	23	♂	Chronic articular rheumatism	240	20	1 hr.	12	Slight	Slight	.....	.....	Nausea	None
J. P.	22	♂	Acute articular rheumatism	340	20	1 hr.	17	Marked	Marked	.....	.....	Nausea	None
J. S.	24	♂	Acute articular rheumatism	440	20	1 hr.	22	None	None	.....	.....	Nausea	Slight
J. C.	23	♂	Chronic articular rheumatism	240	20	1 hr.	12	Slight	Slight	.....	.....	Nausea	None
H. H.‡	12	♂	Acute endocarditis	120	20	1 hr.	6	None	Slight	.....	Slight tinnitus	Nausea	None
H. H.	12	♂	Acute endocarditis	100	20	1 hr.	5	None	.....	.....	.....	Nausea	None
H. H.	12	♂	Acute endocarditis	100	20	1 hr.	5	None	.....	.....	.....	Nausea	
H. H.	12	♂	Acute endocarditis	120	20	1 hr.	6	None	.....	.....	.....	Nausea	
H. H.	12	♂	Acute endocarditis	80	20	1 hr.	4	None	.....	.....	.....	Nausea	
H. H.	12	♂	Acute endocarditis	100	20	1 hr.	5	None	.....	.....	.....	Nausea	
L. P.	20	♂	Endocarditis (chronic)	280	20	1 hr.	14	None	None	.....	.....	Nausea	None

* In the table, ♀ means female, and ♂ male.
† Medication repeated after five days.
‡ Medication repeated after intervals of one, two, four, six, and six days, respectively.

3. Wood and Arnold: Philadelphia Monthly Med. Jour., April, 1899.
4. Wood, Horatio C.: Therapeutics: Its Principles and Practice, Ed. 11, p. 687.
5. Hanzlik, Paul J.: A Study of the Toxicity of the Salicylates Based on Clinical Statistics, The Journal A. M. A., March 29, 1913, p. 957.

of comparison. The nursing staff was instructed to report the signs of intoxication, and when the patients showed definite signs of nausea or vomited, administration was stopped. The usual records were kept at the bedside, including in every case an accurate account of the amount taken. The ward physician on a separate form kept a record of the data contained in Table 1.

The powdered form was given mixed with the sodium bicarbonate, both being placed on the tongue and washed down with from 2 to 4 ounces of water. Water was given freely between doses, and a liquid or soft diet when possible. The powders were weighed and put up by the resident pharmacist.

It will be seen by Table 1 that the extremes of the toxic dose are 80 and 500 grains. The mean dose is 180. The mean dose giving marked relief of pain is 260. Comparing these figures with those given for the mean toxic dose of other salicylates, it is seen that they are all very much the same. Hanzlik[5] reported the mean toxic doses of the various salicylates for adult males and females as in Table 2.

TABLE 2.—MEAN TOXIC DOSES OF THE VARIOUS SALICYLATES

	Males	Females
Synthetic sodium salicylate	180 grains	140 grains
"Natural" sodium salicylate	200 grains	135 grains
Methyl salicylate	120 minims	120 minims
Acetyl salicylic acid (aspirin)	185 grains	120 grains
Salicylosalicylic acid (diplosal)	100 grains	83 grains

It is to be remembered, however, that the salicyl content of strontium salicylate is about four-fifths that of sodium salicylate based on the amount of available anion. The mean effectual dose in rheumatic fever is seen to be 260 grains, which is slightly higher than the figure given for the same dose of sodium salicylate.

The mean dose producing tinnitus, vomiting, delirium, etc., is in this series of little value owing to the limited number of cases, but it is quite obvious that such toxic symptoms readily occur.

The same limitation also makes deductions as to antipyresis and diaphoresis of no value.

The drug was easily given in all cases, and no more than the usual protest was made about the taste. It is very sparingly soluble in water, so that no concentrated stock solution could be made for use in the wards, as is our custom with the sodium salicylate. The powders are less convenient, therefore, to give accurately.

CONCLUSIONS

From the data at hand we can conclude that:

1. The mean toxic dose of strontium salicylate is the same as that for sodium salicylate.
2. Strontium salicylate produces the same gastric and other toxic symptoms produced by any salicylate.
3. It is no more effectual in relief of pain.
4. It is not so convenient to give as are the more soluble salicylates.

The Pupils.—The value of the pupils in diagnosis has been greatly overestimated. There are, in fact, comparatively few conditions in which they yield us important diagnostic evidence, for, although they are very often abnormal, the abnormalities are seldom characteristic of any single pathologic condition and throw little light on the diagnosis.—Richard C. Cabot.

PARALYSIS OF THE RECURRENT LARYNGEAL NERVE RESULTING FROM MITRAL STENOSIS *

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BROOKLYN

It is only recently that recurrent laryngeal paralysis has been known to be caused by mitral stenosis. Oertner[1] in 1897 presented two cases of this condition. Heretofore this etiology was unheard of. One can judge how rare the syndrome is by the fact that in the literature there are only eleven cases confirmed by necropsy. The mechanics of the paralysis are explained by the necropsy findings in selected reported cases. The cases are two of Oertner's, one each of Hofbauer, Frischhauer, Kraus, Freystadtl and Stranz.

In the first case of Oertner, the lumen of the left auricle was distended to the size of a man's fist. The enlarged auricle in its filled state caused compression of the left bronchus, the recurrent laryngeal nerve, and the aortic arch. At the point of compression, the nerve for about 2 mm. was grayish, transparent and thinned out, and microscopically showed degeneration.

In the second case of Oertner, the left auricle was similarly distended to about the size of a man's fist. The aorta was of normal width. The left recurrent laryngeal nerve was on the upper wall of the distended left auricle, and was compressed against the aorta. The nerve at this point had degenerated to a thin band.

From these two cases Oertner came to the conclusion that in certain cases of mitral stenosis the left auricle is so dilated that the recurrent laryngeal nerve is compressed against the aortic arch. As a result the nerve degenerates and paralysis of the left vocal cord follows.

The findings in Hofbauer's[2] case showed the left auricular appendage compressed between the pulmonary artery and the aorta; and the resulting compression caused degeneration of the recurrent laryngeal nerve. As in Oertner's cases, the dilated left auricle was the direct cause of the paralysis.

Frischhauer's[3] case showed that the markedly dilated left auricle did not directly press the nerve against the aorta; but only through the interposition of the pulmonary artery, degeneration and paralysis resulting.

In Kraus'[4] case, the etiology was different: marked dilatation of the right ventricle caused enlargement of the heart to such an extent as to alter the anatomic relations of the heart, pulmonary artery, ligamentum arteriosum and the aortic arch; the nerve was strangulated by the ligamentum arteriosum. The nerve at this point appeared thin and grayish. The left auricle, even though markedly dilated, was 4 cm. from the point of compression. The paralysis in this case followed compensation, while in the other case it followed decompensation.

The ductus arteriosus can cause the paralysis in other ways than that described above. This is seen in the case of von Schrötter,[5] in which the paralysis was caused by incarceration of the nerve between the aorta and the patent ductus. The pulsations of the

* From the medical service of Dr. Leon Louria.

1. Oertner: Wien. klin. Wchnschr., 1897, p. 753.
2. Hofbauer: Wien. klin. Wchnschr., 1902, p. 1065.
3. Frischhauer: Wien. klin. Wchnschr., 1905, p. 1383.
4. Kraus: Verhandl. d. XIX Kongr. f. inn. Med., p. 608.
5. Von Schrötter, H.: Ztschr. f. klin. Med., xliii, p. 160.

vessels caused the paralysis. In this case there was also a slight mitral stenosis that played but a small part in the etiology. That paralysis of the recurrent laryngeal nerve can result from a patent ductus arteriosus is affirmed by Gerhardt in his classic description of ductus arteriosus patency.

The mechanics in Freystadtl and Stranz'[6] case was similar to that of Oertner's cases.

Hofbauer[7] observed paralysis of the recurrent laryngeal in a case of slight mitral stenosis which did not come to necropsy, and that in certain positions the hoarseness would vary. In lying on the right side or back the hoarseness was less than when lying on the left side or bending forward. He explained this by the fact that in certain positions the nerve was compressed more than others. Freystadtl and Stranz take exception to this view, because in the cases that came to necropsy the nerve and laryngeal muscles showed degeneration which was complete; mere change in position could not have produced the degeneration.

As heretofore shown, paralysis of the recurrent laryngeal nerve can be caused in mitral stenosis by the direct pressure of the left auricle, or, indirectly, through the pressure of the pulmonary artery, and finally the changed position of the heart can cause the ligamentum arteriosum to strangulate the recurrent nerve. As seen from the literature, a lesion of the mitral valve producing dilatation of the ventricle (mitral insufficiency) will not alone produce the condition; there must be associated with it such a lesion of the mitral valve as will produce rather a dilatation of the auricle (mitral stenosis).

Case 1.—H. F., a boy aged 4½ years, was admitted March 6, 1914; died Jan. 6, 1915. The family history was negative.

Past History.—Chickenpox two years, measles one year, prior to admission; no complications.

Present History.—Six weeks previous to admission the child became ill, with malaise, fever, vomiting, pains all over body, more marked in the knee joints. This persisted six days; since then he has been short of breath on slight exertion, with attacks of palpitation. One month before admission the mother noticed that the child became hoarse.

Physical Examination.—Fairly well nourished; slight dyspnea; no cyanosis; skin and mucous membranes are pale; lymph glands slightly palpable; no pulsation in vessels of neck.

Lungs: Normal pulmonary resonance; breathing is exaggerated, especially on inspiration; a few subcrepitant râles at left base.

Heart: Right border at the right border of sternum; upper border at the second interspace; left border at mammary line; apex is visible and palpable in the sixth interspace 7.5 cm. from the median line; a presystolic thrill is felt over the apex. At the apex the sounds are replaced by murmurs, a soft blowing systolic transmitted to the axilla, and a presystolic murmur heard within the apex. Over the fourth left interspace near the sternum there is a rough systolic murmur; a soft blowing systolic murmur is present over the aortic area; the second pulmonic sound is accentuated.

Abdomen: Negative; liver and spleen not felt.

Extremities: No clubbing; no edema.

Urine: Faint trace of albumin; no sugar; no casts.

Blood: Hemoglobin 70 per cent.; red blood cells, 3,900,000; white blood cells, 5,900.

Differential Count: Polynuclears 60 per cent., lymphocytes 40 per cent.

Roentgenogram taken March 7 showed the heart greatly enlarged, about 2½ fingers' breath to the right of the sternum, and the left border at its inferior point reaches just within the anterior axillary line.

Laryngeal Examination: Left abductor paralysis; left vocal cord drawn to median line; true and false cords pale; right cord moves normally.

The condition of patient improved markedly under treatment. He had a temperature as high as 101 F. for the first two weeks, and after that between 98 and 100. The hoarseness remained unchanged. He left the hospital in May, 1914, and felt well up to the early part of December, when he had a recurrence of his symptoms, and was readmitted to the hospital Dec. 14, 1914. Laryngeal examination December 19 showed the same findings as before. Despite active treatment he died Jan. 6, 1915. Necropsy was not permitted.

Case 2.—A. A., aged 27, bartender, was admitted May 20, 1915; died May 31, 1915. Family history negative.

Past History.—The patient does not recall any of the diseases of childhood. Never had any of the acute infectious diseases. About four years prior to admission the patient had difficulty in breathing, but had no precordial pain or palpitation. This lasted three days; he then coughed up a little blood, after which he felt better. In the following three years he had several similar attacks, but they were mild. A year ago, however, he suffered a more severe attack that necessitated his confinement to bed for one week; his condition improved and continued so until two months before admission. Good habits.

Venereal: Had repeated attacks of gonorrhea, the last one five years ago; no syphilis.

Present History.—Illness began about two months ago with dyspnea, cough, palpitation and precordial pain. These symptoms continued and after treatment in a sanatorium for seventeen days he felt very much better. During this time he coughed and spat up some blood. About four weeks ago he went to Lakewood, N. J., and while there was more active than advised to be. After one week he went home, where he remained for two weeks. About three or four days before admission he became more dyspneic, and the symptoms became worse. He developed swelling of the ankles the day before admission.

Physical Examination.—General condition poor; anemic; dyspneic and cyanotic; cyanosis especially marked in ears and mucous membranes; venous pulsations visible and palpable; arterial pulsations marked.

Eyes: Pupils equal and react to light and accommodation.

Lungs: Dulness, subcrepitant and crepitant râles; distant voice and breath sounds over both bases.

Heart: Right border 5 cm. from midsternal line. Left border, 15 cm. from midsternal line. Apex beat situated in sixth left intercostal space; somewhat diffuse. At apex a presystolic thrill is palpable. The sounds are variable in force, irregular in rhythm, and of poor muscular quality; over apex a presystolic murmur is heard, not transmitted; also a systolic murmur transmitted to the left axilla. The second pulmonic sound is accentuated. The second aortic is accompanied by a diastolic murmur transmitted along the left border of the sternum, and best heard on the fourth left interspace near the margin of the sternum.

Pulses irregular, fair tension, equal; vessels moderately thickened.

Abdomen: Distended; otherwise negative.

Liver: Palpable about 10 cm. below the costal margin, tender, with transmitted pulsations.

Spleen and kidneys not palpable.

Edema over ankles; knee-jerks normal.

Roentgenogram taken seven days after admission showed marked cardiac dilatation to the right and left. The left ventricle and auricle were enlarged and the markings lost.

Blood culture, sterile.

Blood Counts	5/20	5/25
White blood cells.....	16,600	9,800
Lymphocytes	14 per cent.	12 per cent.
Polynuclears	86 per cent.	88 per cent.

Blood pressure 130 to 150.

6. Freystadtl, B., and Stranz, J.: Monatschr. f. Ohrenh., 1902, v, 557.
7. Hofbauer: Wien. klin. Wchnschr., 1905, p. 1385.

Urine: Acid; marked albumin; no sugar; many finely and coarsely granulated casts; occasional white blood cell. Bile present in urine May 24 and thereafter.

Patient was admitted in extreme stage of decompensation; was put on sedatives and seemed to improve a little; but on the fourth day he was markedly jaundiced, and two days later he became hoarse. The larynx showed the left true vocal cord in a stationary position (abductor paralysis). The temperature ranged from 102 to 103 F. and pulse 130 to 160; respirations 24 to 26. He was put on active stimulation, with no response, and died May 31.

In this case no necropsy was permitted so that the mechanics of the condition could not be determined.

RADIAL PULSE DIFFERENCE AND LEFT RECURRENT NERVE PARALYSIS DUE TO MITRAL STENOSIS *

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AND
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The history and the result of the examination of our patient was as follows:

J. R., woman, aged 25, married two years, with no children or pregnancies, had a severe attack of inflammatory rheumatism thirteen years ago. There were no cardiac symptoms until three years ago; at that time palpitation began. During the last year, she has also become somewhat dyspneic. Her hoarseness commenced six months ago. Examination of the larynx showed that the left vocal cord was immovable and somewhat shortened and in the so-called cadaveric position, owing to recurrent paralysis. The voice on phonation was indistinct and hoarse. The examination of the cardiovascular system revealed the following: There was a noticeable difference between the right and left radial arteries on palpation, particularly when the arms were extended above the head. The systolic and diastolic blood pressures of the right brachial were respectively 110 and 80 mm. of mercury, of the left, 82 and 70 mm.; of the right popliteal, 118 and 85 mm., of the left, 105 and 70 mm. There was no perceptible difference in the carotid pulsations. The pulse was regular, the rate 100 per minute. There was vigorous visible precordial pulsation, a diastolic thrill was felt and a loud rumbling presystolic murmur was heard at the apex. The aortal sounds were normal. Over the pulmonary area, there was a somewhat rough systolic murmur and an exceedingly accentuated snappy second sound; the sharp click of pulmonary valve closure was also evident on palpation. A dry pericardial friction rub was heard over the lower sternum; three weeks later, there was also evidence of a fresh pericarditis over the pulmonary area. There was no systolic apical retraction. Orthodiascopic examination (Fig. 1) revealed a short aortal bulge (*A*); the outline of the aorta was apparently encroached on by the very much dilated pulmonary artery (*P A*). The left auricle (*L A*), though not enlarged in the tracing, overlapped the pulmonary artery to some extent. The left ventricle (*L V*) and the right side of the heart were also somewhat dilated. The electrocardiogram (Fig. 2) showed a negative R (S, according to Lewis) in Lead 3, presumed evidence of left ventricular preponderance,[1] and a notched, enlarged P in the first lead; when the latter is found in the second lead, it is sometimes regarded as evidence of auricular hypertrophy. There was no edema. The Wassermann examination of the blood was negative. Summarizing, the patient had left recurrent laryngeal paralysis, differences in the pressure of the right and left radial and popliteal arteries, mitral stenosis, dry pericarditis, dilated pulmonary artery, an aorta somewhat dilated, and an enlarged left ventricle and left auricle.

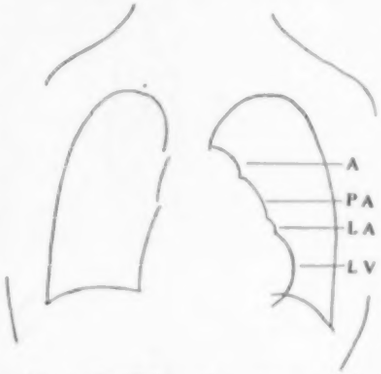

Fig. 1.—Orthodiascopic tracing: *A*, aortal outline; *P A*, outline of pulmonary artery; *L A*, outline of left auricle; *L V*, outline of left ventricle.

Ortner[2] in 1897 first described the connection between mitral stenosis and paralysis of the left recurrent nerve. Since then, reports of thirty-two cases have been collected from the literature by Cuisset[3] up to 1912. The various theories held accountable for the paralysis may be recapitulated as follows:

1. Ortner's[2] Theory: The paralysis is due to pressure of the enlarged left auricle on the recurrent nerve.

2. Kraus'[4] Theory: The right ventricular dilatation present in mitral stenosis causes displacement of the heart to the right, with consequent dragging on the aortic ligament and arch and resultant stretching and paralysis of the nerve.

3. Alexander's[5] Theory: The pulmonary artery by its own enlargement, or indirectly by enlargement of the left auricle, is pressed against the nerve and aortal arch.

4. The nerve may be compressed and caught between bands of pericardial and mediastinal adhesions.

All these theories have had some necropsy support.[3] Normally, the pulmonary artery is situated and divides immediately beneath the aortic arch; below the pulmonary artery is the left auricle. It therefore seems improbable that the left auricle, even when extremely enlarged, can directly exert sufficient pressure to produce recurrent paralysis, unless it is jammed between or adherent to the pulmonary artery and aorta. This happened in one case that came to necropsy.[6] In another case,[7] the left auricle was the size of a small fist and was found pressing against the nerve. From careful anatomic studies of frozen sections, Fetterolf and Norris[8] state that the effect of left auricle dilatation would be pressure of the left pulmonary artery against the aorta, and the left pulmonary vein against the pulmonary artery, thus forcing the latter against the aorta. They believe that direct pressure alone of the enlarged left auricle can scarcely produce paralysis unless squeezed in between or adherent to the pulmonary artery and aorta. They conclude that anything which will dilate or force upward the left auricle, the left pulmonary vein or left pulmonary artery will tend to produce paralysis, and that the latter must finally be caused by the nerve being "squeezed between the left pulmonary artery and aorta or aortic ligament." This conclusion bears out

* Presented at the Academy of Medicine, Section on Laryngology and Rhinology, May 25, 1915, by Dr. John Guttman.

1. Lewis: Clinical Electrocardiography.
2. Ortner: Wien. klin. Wchnschr., 1897, No. 33, p. 763.
3. Cuisset: Thèses de Paris, 1912, 1913.
4. Kraus: Verhandl. d. XIX Cong. f. inn. Med., 1900, p. 607.
5. Alexander: Berl. klin. Wchnschhr., 1904, p. 135.
6. Herrick: Chicago Med. Recorder, 1898.
7. Osler: Arch. d. mal. du cœur, 1909, p. 74.
8. Petterolf and Norris: Am. Jour. Med. Sc., 1911, cxii, 625.

the common knowledge of the normal close juxtaposition of pulmonary artery and aorta. A similar conclusion was reached by Frischauer[9] who, in a case at necropsy, found the nerve squeezed between the left pulmonary artery and aorta by the pressure of the dilated left auricle and pulmonary vein.

In our case, there was no evidence of abnormal right ventricular enlargement; the heart was dilated to the left, as revealed by roentgenoscopy and corroborated by the electrocardiogram. These facts would tend to discredit Kraus' theory as to the etiology. The orthodiascopic findings and physical signs over the pulmonary artery allow us to conclude that the recurrent paralysis was due to dilatation and pressure of the latter; whether or not the left auricle was a factor in pushing the pulmonary artery against the aorta it is impossible to state. Lian and Marcorelles[10] insist on the presence of old thrombosis of the left auricle or of mediastinitis as contributory causes. Pericarditis was present in our case; it was at first confined to the precordial area over the lower sternum, and later involved the pulmonary area. This may have been an added factor in binding down the dilated pulmonary artery.

A unique feature was the presence of a marked difference in the two brachial blood pressures and in the two radial pulses; this in conjunction with laryngeal paralysis formed a striking resemblance to the clinical syndrome of aortic aneurysm. Lian and Marcorelles[10] mentioned that Popoff had seen or described these complications in mitral stenosis, but we have been unable to find this reference in a thorough search of the entire literature. Our opinion is that the dilated pulmonary artery was probably wedged in with sufficient force under the aortal arch and especially opposite the origin of the left subclavian artery to cause interference with the circulation of the latter and consequent difference between the two sides in the brachial blood pressures and in the radial arteries. To a lesser extent, the blood supply in the left leg was similarly interfered with by encroachment on the aortic lumen.

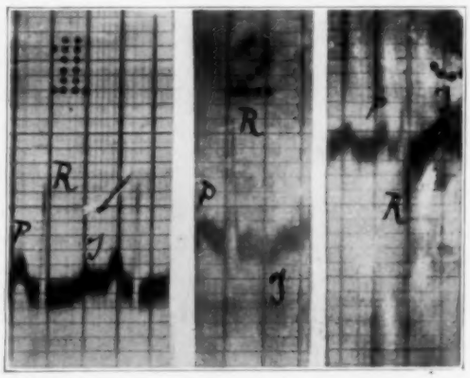

Fig. 2.—In the electrocardiogram, *P* indicates the auricular complex, *R-T* the ventricular complex; 1, 2 and 3 refer to the different leads; the vertical lines measure one-fifth second; the auricular complex *P* is enlarged and notched in the first lead. The direction of *R* is negative in Lead 3.

9. Frischauer: Wien. klin. Wchnschr., 1905, xviii, 1383.
10. Lian and Marcorelles: Arch. d. mal. du cœur, 1913, p. 561.

Treatment of Ringworm of Scalp and Body.—Dr. Eugene G. Mattison, Pasadena, Calif., writes: In THE JOURNAL, Nov. 13, 1915, there is an article on the prevention and treatment of ringworm and favus of the scalp. There is a very simple and efficacious method of treating ringworm of the body as well as of the scalp which a number of others and myself have used here for a number of months. First, the infected area is cleaned up. If it is of the scalp it must of course be shaved. It is then cleaned with ether; this is followed by an application of 50 per cent. tincture of iodin, and then the infected areas are frozen with ethylchlorid. One treatment is sufficient for body ringworm, two or three for ringworm of the scalp. In favus I have never had the opportunity to try this treatment, as those cases are a rarity with us.

DIAGNOSTIC METHODS AND PATHOLOGIC CONSTANTS IN IDIOPATHIC EPILEPSY

SECOND REPORT *

CHARLES A. L. REED, M.D.
CINCINNATI

That constipation due to mechanical interference with the fecal current is an early if not an initial cause of epilepsy was set forth in my preliminary report.[1] I then announced my intention to submit supplementary reports based on further experience. It has occurred to me that my next report, the present one, ought logically to deal with, first, methods of diagnosis; next, the connection of cause and effect between the constipation and the epilepsy; third, the determination, if possible, of certain pathologic constants of the disease, and, finally, if possible to find the essential etiologic factor and thus to indicate the logical basis for comprehensive yet specifically directed treatment.

DISCLAIMER AND PLEA

In submitting this report, care is taken to make clear the fact that data for my generalizations are derived entirely from a study of my own cases. These records now number over 700, of which only 168 patients have been submitted to operative treatment. I ought to add that, during the last ten years, I have had occasion to operate also for intestinal conditions on over 300 nonepileptic constipated patients. I realize that these epileptics have been referred to me by their family physicians, first, because my former report dealt with constipation as a cause of epilepsy, and next, because the patients thus referred have had both constipation and epilepsy. In this way, possibly, it has come about that my epileptic clientele has been uniformly of one class. In other words, it would seem that the cases that have come to me may be grouped under the old and absurd title of "idiopathic epilepsy." I do not assume, therefore, that my experience has covered the entire field of epilepsy. At the same time I cannot ignore the significance of the constant relationship of conditions that I have encountered. These facts furnish ample reason why my observations should go to the profession as a basis for the careful investigation of epileptics along these new and, I trust, more fruitful lines.

In outlining what seems to me to be the real syndrome of epilepsy, as least of so-called idiopathic epilepsy, I ask, specifically, that others interested in the subject and with large clinical opportunities for its elucidation may cooperate with me to the extent of applying the

* Amplified from remarks before the Seventh Pan American Medical Congress, San Francisco, June 19, 1915, and read before the Columbus (Ohio) Academy of Medicine, Sept. 27, 1915.

* Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter may be obtained on request.

1. Reed, Charles A. L.: The Probable Cause and Logical Treatment of Epilepsy, a Preliminary Report, THE JOURNAL A. M. A., March 27, 1915, p. 1047; Constipation and Epilepsy, Lancet-Clinic, July 25, 1914.

diagnostic methods that comprise the basis of this report, with the object of determining the constancy or inconstancy of conditions which I shall describe, and the validity or invalidity of conclusions which, it would seem, are justified by my really exceptional experience. Only in this way may it be possible to dissipate the

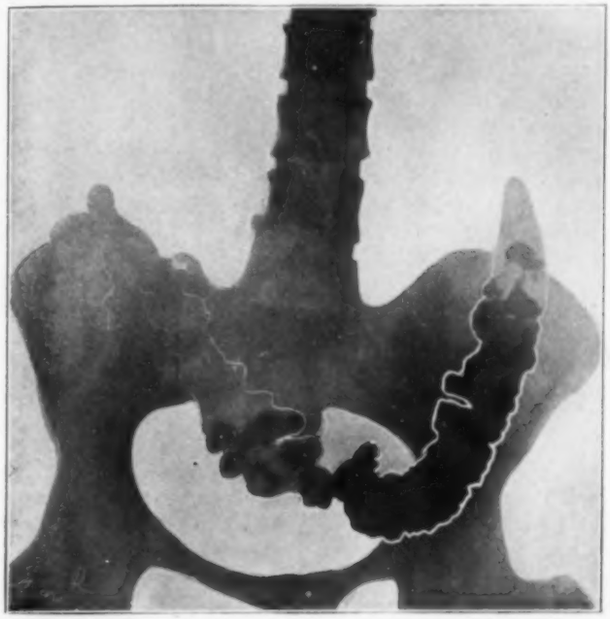

Fig. 1.—Masked stasis showing the barium in the transverse colon forty hours after ingestion in a patient who had "regular action of the bowels" once and sometimes twice every day. The last of the barium in this case passed eighty-two hours after ingestion. The roentgenogram shows the causative ptosis with retardative angulation.

darkness and bring light and hope to the most pathetic class of sufferers that it has ever been my misfortune to encounter.

THE GENERAL HISTORY OF THE CASE

The routine investigation of the case naturally begins with details concerning sex and age. Occupation is important as showing a probable cause of visceral states, to which I shall refer at greater length. Accidents and injuries have a similar significance. Heredity is interesting as showing that less than 2 per cent. give history of parental epilepsy. In other words, direct heredity may be disregarded as a cause and that, too, for reasons which shall become obvious. The general nutrition will usually be found from fair to good, although in certain cases there is a history of loss of flesh. The appetite is generally excessive, and is ordinarily much greater than the nutritional results. I have, however, had a few cases of hypernutrition with marked obesity. The temperature will be subnormal more frequently than otherwise, often registering as low as 97 F., in rare cases as low as 96. When the temperature is at 97 or lower, the patient may be considered as in the imminence of an attack. The blood pressure is generally low, ranging from 80 to 110, and is more frequently below than above the latter figure.

The pulse rate, in the absence of disease of the heart or blood vessels, generally correlates with the temperature and blood pressure. The secretions are, of course, investigated by methods and with results which I shall present in detail in connection with special clinical features of these cases.

SPECIAL PHYSICAL EXPLORATION

After having ascertained these general facts, it is necessary to proceed with a more special physical exploration. The cranium is examined for possible malformations, lack of symmetry, and depressed fractures. The scalp is examined for scars that may be significant of deeper injury. The eyes are taken into consideration for possible motor or visual defects, which some observers have thought to have a causal relationship to epilepsy. The teeth, gums, tonsils, fauces and sinuses are inspected. The ears are at least inquired about, particularly as to whether or not they are catarrhal, and as to the existence of tinnitus. The neck is gone over, and the condition of the thyroid and of the cervical lymphatics is determined. The lungs and heart are examined. The object is, of course, to determine the possible existence of foci of infection or of "centers of irritation," with the result that such conditions are found in about the same ratio as in non-epileptics. In other words, their inconstancy, as well as their order of occurrence, when they do exist, would seem to exclude them as definite etiologic factors. Then the lungs and heart are examined. The abdomen is gone over by methods of which I shall speak in detail. The pelvis is carefully examined to determine uterine, ovarian, cystic and prostatic conditions according to the sex of the patient.

Then the usual neurologic exploration is made with reference to sensation, coordination, the reflexes and muscular power. The whole examination is concluded with a judgment, to which the entire investigation has conduced, as to the mental state of the patient and as to whether any apparent mental deterioration is transient or permanent, whether it is congenital or due to secondary changes, or whether it is the consequence of drug habituation.

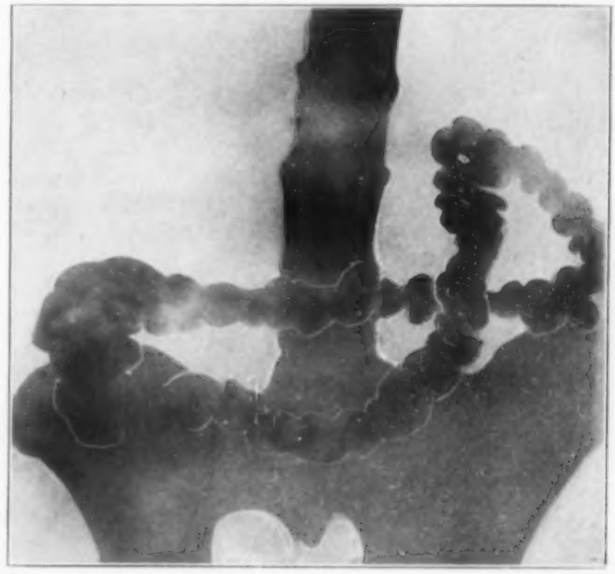

Fig. 2.—Barium in the colon ninety-eight hours after ingestion in an epileptic with "regular movement of the bowels" once and sometimes twice every day.

In reviewing my observations in now a large number of these cases, I may say that, with the exception of conditions within the abdomen, the temperature range and the blood pressure, there is nothing revealed by this routine examination that is constant, and anything that is not constant is not characteristic. In other

words, we are left just where we began, with no interpretation of such associated phenomena as are uniformly present, with no conception of the relation of such phenomena to underlying physical states; in short, we are left simply with the knowledge that our patient

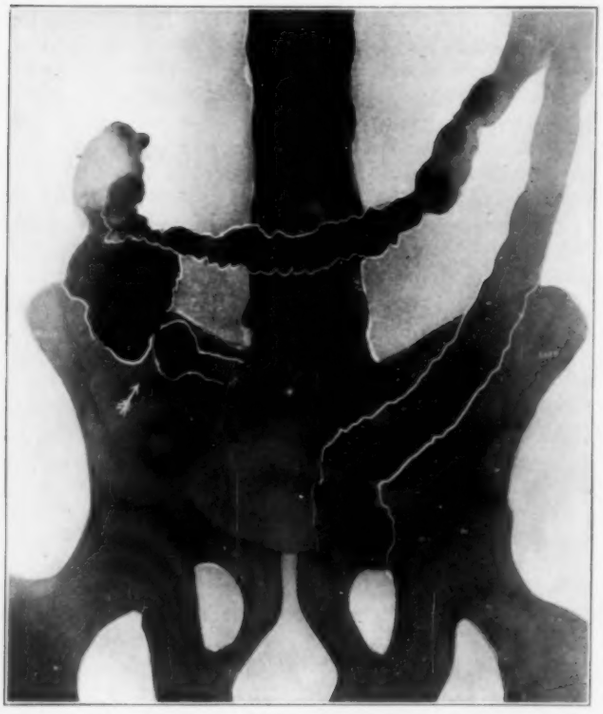

Fig. 3.—Case of ileac stasis (indicated by arrow) associated with mobile cecum and retardative angulations, the roentgenogram being taken fifty-two hours after ingestion.

has fits, or is threatened with fits, or with something like fits.

CONSTIPATION AND EPILEPSY

In view of the unsatisfactory results thus far realized, it would seem the part of wisdom to follow the clinical trail in the further prosecution of our inquiries. This trail begins, of course, with the epileptic phenomena. We strike it again the moment we begin to inquire into associated conditions, the most obtrusive and persistent of which relate to the excretory and eliminative functions. The first of these functions to be brought to our attention is that of the intestines. The patient, generally without waiting to be asked, complains of constipation. He says that he was constipated possibly from infancy, or since he had a fall, or a strain, or a blow on the abdomen; that his constipation began before his epilepsy; that his epilepsy is worse when his constipation is worse; that he takes physic continually; that he has constantly to increase its dose, and that he is worse as soon as he fails to "dynamite" his bowels. As a matter of actual observation, constipation exists in practically 100 per cent. of the epileptics that come to me. I have seen but few apparent exceptions, and they were apparent and not real. In one case there was hyperperistalsis, induced by conditions within the duodenum, the transverse colon and the sigmoid, but with demonstrable retardation in the terminal ileum. The other apparent exceptions were simply cases of masked stasis. An example of this kind was that of a man who assured me that his bowels moved normally once and sometimes twice every day. The Roentgen ray and a barium meal revealed a transit of eighty-two hours. In other words, in these cases of masked stasis, the "regular" daily movement is simply one section of a slowly moving procession that is from several hours to several days behind schedule time.

THE PHYSICAL CAUSE OF CONSTIPATION IN EPILEPTICS

If, as we find, constipation is a constant feature of these cases, it is obviously of first importance that its cause shall be ascertained. In this connection, it should be remembered that this constipation, while worse at some times than at others, is in no sense an acute or transient condition, but that, on the contrary, it has persisted for periods varying from a year to forty years, or even longer. It has persisted, too, in spite of the best of treatment addressed to sluggishness or so-called atony of the intestines. The question of mere functional inefficiency, or of atony, except as in some measure the necessary result of the long use of cathartics, or of injections, or of secondary defective innervation, or of hyperabsorption demanded by tissue thirst, all primarily induced by conditions that I shall describe, is not, therefore, to be taken into consideration.

THE ABDOMEN IN EPILEPTICS

These patients may or may not tell of recurrent pains which may or may not have been severe, located in one or the other or in all four quadrants of the abdomen. This pain, possibly only a discomfort, will generally have been of the come-and-go variety, but persists in returning over either the cecum, the hepatic flexure, the splenic flexure or the sigmoid. When the patient stands up with the abdomen exposed, we

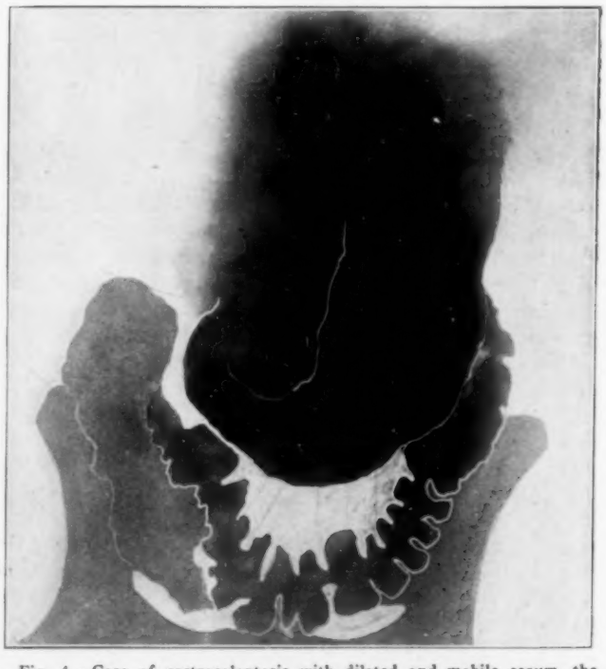

Fig. 4.—Case of gastrocoloptosis with dilated and mobile cecum, the barium here seen in the transverse colon having been ingested seventy-eight hours previously. That in the stomach was ingested for purposes of demonstration immediately before the roentgenogram was taken.

observe a flattening on either side, just outside the recti muscles, at about the level of the linea semilunaris. The abdomen is either actually pendulous, or, it would seem, is trying to be pendulous, as shown by

the fact that palmar palpation reveals a more or less relaxed abdominal wall made tense by internal pressure or weight. With the patient still standing, percussion reveals the complete absence of gastric and intestinal resonance in the upper zone of the abdomen, the

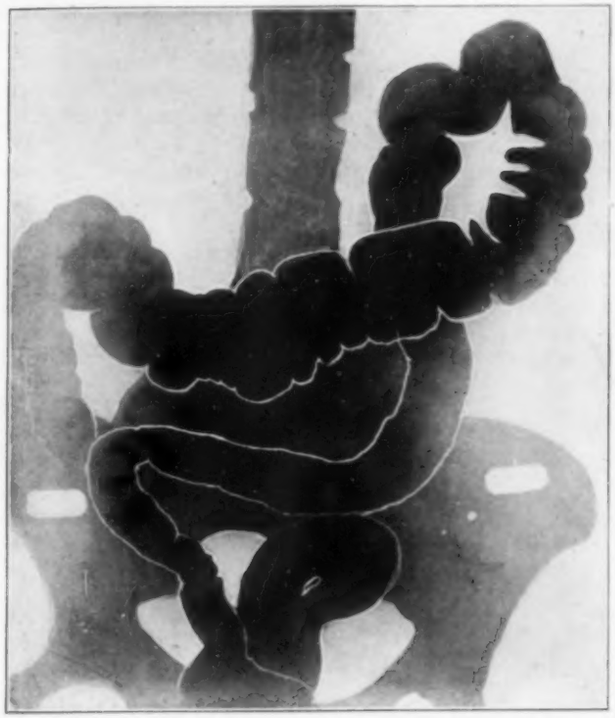

Fig. 5.—A strikingly variant type of colon with large sigmoidal loop, the former being the obvious mechanical cause of stasis as demonstrated in Figure 2.

few exceptions to this rule being generally explainable by the presence of abnormal volumes of gas in some part of the tract. On the other hand, the cecal note can generally be heard low down, often indeed as low as Poupart's ligament. The colonic note may or may not be elicited, but when it is, it is always below the umbilicus, often indeed as low as the pubes. The gastric note is to the left of the umbilicus and sometimes far below the crest of the left ileum.

If, now, the patient is placed in the Trendelenburg position, the loci of these notes will be changed respectively about as follows: the cecal note will be at or near the crest of the ileum, the hepatic flexure note will be at the right costal margin, the gastric note will be near the ensiform — all approximately normal in position. The lower zone and especially the left lower quadrant will now be free from resonance. If this restitution of the organs to approximately normal position is not effected by the change in position, the fact may be indicative of adhesions, or of massive redundancies, or of overdistention from either gas or barium. The findings as indicated are, however, sufficient of themselves to justify the diagnosis of displacement of the stomach and large bowel; or, in the absence of the stomach sign, of displacement of the cecum and colon; or, possibly, with complications at the sigmoid. In any event, a strong presumptive diagnosis of fecal stasis due to mechanical conditions within the intestines may be based on this examination alone, when conducted by one who has become familiar with the technic and whose ear has been educated to the sounds.

ROENTGEN FINDINGS IN THE ABDOMEN OF EPILEPTICS

Although this physical examination of the abdomen may satisfy one that the stomach or the intestines or both are in malposition, and that this malposition is responsible for the functional disturbance, I feel that it is never fair, either to the patient or to myself, not to subject the case to every method of accuracy and precision in diagnosis. In accordance with this rule, I look on a Roentgen examination in these cases as essential not only for purposes of record as to conditions already obvious — and my cases with operation are all thus of record — but also to determine conditions not otherwise ascertainable, and, finally, to serve as a guide in any surgical procedure that may be undertaken for their relief. I prefer to begin this examination by giving a barium meal, preferably supper, and observing the transit thereafter at intervals varying from twelve to twenty-four hours. At the final examination, with the patient in the upright position, some barium may be taken to show the position of the stomach. When there is any suspicion attaching to stomach clearance, the earlier observations should be made at shorter intervals. When the transit has been accomplished and the observations duly made and recorded, the colon is emptied either by a brisk laxative or a high enema, after which it should be slowly filled to the cecum with a barium enema. Pictures should then be made with the patient in both the erect and Trendelenburg postures. This method of examination, following the physical examination already described and confirmed by subsequent surgical exploration of the abdomen, has brought me the surprising information that, with the rare exceptions previously noted, some form of mechanical retardation of the fecal current exists in 100 per cent. of the epileptics that have come under my observation.

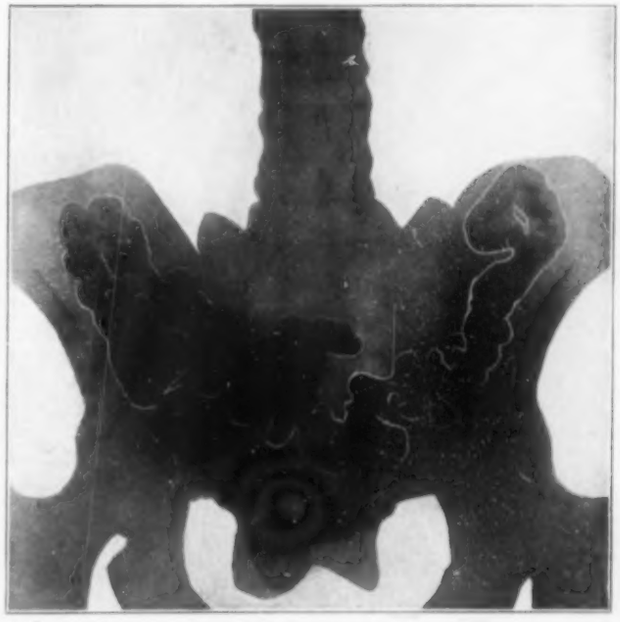

Fig. 6.—Extreme ptosis of the colon and cecum with stasis in both the large intestine and the ileum sixty hours after ingestion.

I have said that some form of mechanical retardation exists in every case. The details, however, are distinctly variable. Space here permits me to mention only the chief conditions that are thus encountered, namely, ptosis of the colon with retardative

angulations; large, flabby and mobile cecum; dilated ascending colon; atrophied transverse colon; redundancy of the transverse colon; retardative angulation of the splenic flexure; ileocecal insufficiency; retardative angulation with or without adhesion at or near the terminal ileum; redundancy with or without adhesions of the sigmoid, and, occasionally, marked patulousness with or without malposition of the vermiform appendix. The transit studies show retardation at either one of several of the various points which I have just enumerated. The stasis thus shown may vary from twenty-four hours to a week or more. This may be true even in the cases of masked stasis, by which I mean the cases of regularity of bowel action with retardation of bowel content, of which I have already spoken. In this connection, it should be urged that interpretation of the plates or of fluoroscopic demonstrations should be attempted only by persons who are conversant not only with such demonstrations, but also with their actual meaning, as shown by experience in subsequent exploratory operations. In no instance should the opinion of Roentgen operators who are not physicians be accepted without competent professional confirmation.

THE TOXEMIA OF EPILEPSY

Clinical demonstrations thus establish the fact that in epilepsy there exists a mechanical distortion of the alimentary canal and an always present and persistent retardation of the fecal current. That this retardation is mechanical rather than either "atonic" or "reflex" is amply proved by the prompt disappearance of the constipation and its resultant symptoms in the great majority of cases after correction of the mechanical defect. This point settled, we need now to discuss the next equally demonstrable effects of the constipation. Thus, constipation necessarily implies that the watery element has largely disappeared from the intestinal content. It can have gone in only one direction, and that is through the absorbents into the general circulation. It has also necessarily carried with it all substances which it has held in solution. These embrace a certain residuum of food elements, certain secondary products of ordinary chemical change in the food elements, certain abnormal fermentative products and, what is clinically even more important, certain toxins of bacterial origin (decomposition). Probably the most important because the most toxic single element thus elaborated in the ileum and absorbed either from the ileum or the colon, or both, is betaiminazo, shown by Mutch to have its origin in the small intestine in cases of ileac stasis studied by him at Guy's Hospital. In addition to the foregoing, the absorbent current carries with it back into the system certain secreted products from the liver, pancreas and the gastro-intestinal glands, embracing even the saliva. It is not demonstrated that, under normal conditions, normal bacteria of the intestines ever find their way thence into the circulation; but, as I shall show, it does carry bacteria into the circulation under abnormal conditions.

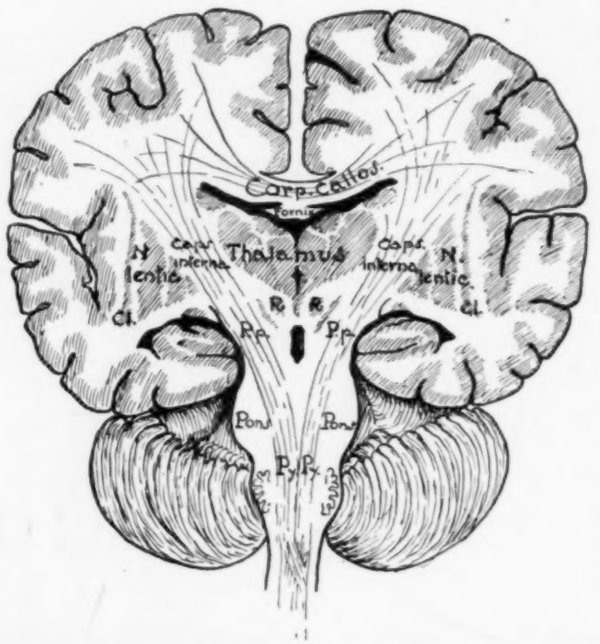

Fig. 7.—The gateway of the brain or the internal capsule, a frontal section of which is here made to show the course of the long conduction cables or fiber tracts, and the continuation of the internal capsule into the Pes peduncle (*Pp*); *Cl* is the claustrum; *R*, the nucleus ruber; *Py*, the pyramidal tract. (After Villiger, Emil: Brain and Spinal Cord, translated by G. A. Piersol, Philadelphia, J. B. Lippincott Company, 1912, p. 62.)

With this understanding of what, in part at least, must necessarily take place in the presence of intestinal stasis and which must take place *in degree relative to the persistence and duration of the stasis,* we are prepared properly to interpret the symptoms which we next encounter. As I have previously pointed out,[1] epileptics under my observation have a low mean average of temperature (97.2) with a tendency to vacillate between 96 and normal, as determined by observations extending over a period varying from a week to ten days, or longer in each case. When, as rarely occurs, the temperature goes to 100 or a trifle higher, the fact implies an intercurrent low grade infection. There is a tendency to cold feet and cold hands. Occasionally, there is a cold, clammy perspiration of the forehead and extremities, although, for the most part, these patients sweat but little, if any, under circumstances when they ought to sweat. When perspiration is forced, it is generally acid in reaction to litmus, smells sour and, at the time of a seizure, becomes peculiarly offensive. The tendency of these patients to hebetude and mental depression is a feature that they at times possess, always in kind and sometimes in degree, with the victims of the more generally recognized special toxemias associated with the acute infections. The therapeutic test of active elimination, especially by cathartics and by forced sweating, with resulting temporary amelioration of the symptoms, has a distinct diagnostic value. In short, the general clinical picture presented by these cases, if carefully studied, will impress the practitioner as being closely analogous to one that he has long since learned to recognize as that of a low grade infection with associated toxemia.

THE CHRONIC ACIDOSIS OF EPILEPSY

Our next question concerns the inevitable result of the toxemia. Here again our detection and interpretation of symptoms may well be based on accepted physiologic concepts. The first and most fundamental of these concepts is that the normal integrity of the tissues depends on the normal oxygen-carrying power of the blood. The next and equally important concept is that an inhibited supply of oxygen to the tissues results

in the formation of various acid products within the tissues. As there is a wide range between a normal supply of oxygen to the tissues and a supply so inhibited that life can merely be sustained, so must there be a correspondingly wide range in the degree of resulting acid formation within the tissues. It is also equally axiomatic in this, as in other vital processes, that the persistence of the effect is relative to the persistence of the cause. It is likewise axiomatic that, if the resulting products of a vital process are not disposed of as rapidly as they are formed, they necessarily become cumulative and in that sense progressive. It is known, too, that toxins by direct action on the tissues, themselves tend to form acid within the tissues, and thereby augment the development and persistence of acidosis. We know, furthermore, that certain toxins seem to have a selective action on certain tissues and that, as a result, a more or less focalized acidosis may exist in such tissues, even in the presence of a general systemic acidosis.

Turning now to the case in hand, we find that the toxemia of epilepsy, like all other toxemias, diminishes the oxygen-carrying power of the blood. It must, therefore, in that way as well as by direct action of the infection itself, not only favor, but inevitably cause the development of acid in the tissues. The evidence of this process, which, be it remembered, takes place in the tissues and not in the blood current, much less in the secretory glands, is, however, to be found in the high acid index of various secretions. The saliva, normally alkaline, is acid in exactly 100 per cent. of the epileptics that come under my observation, the findings in each case being based on frequent litmus reactions during a series of days. To avoid error, care is taken to cleanse the mouth and to test the saliva in situ as it flows from the sublingual glands. The value of this index is confirmed by the fact that after deacidation of the system by appropriate treatment, the reaction of saliva to litmus, even on the tongue and without the precautions mentioned, becomes consistently alkaline. The urine, as determined by litmus, methyl red or other indicators, also has a persistently high acid index with but slight vacillations under the influence of diet or medication. The perspiration, where it can be provoked, is likewise acid. Hyperacidity of the stomach is also a frequent but not constant complaint, and the siphoned contents of the stomach often yield positive findings as to an excess of hydrochloric acid.

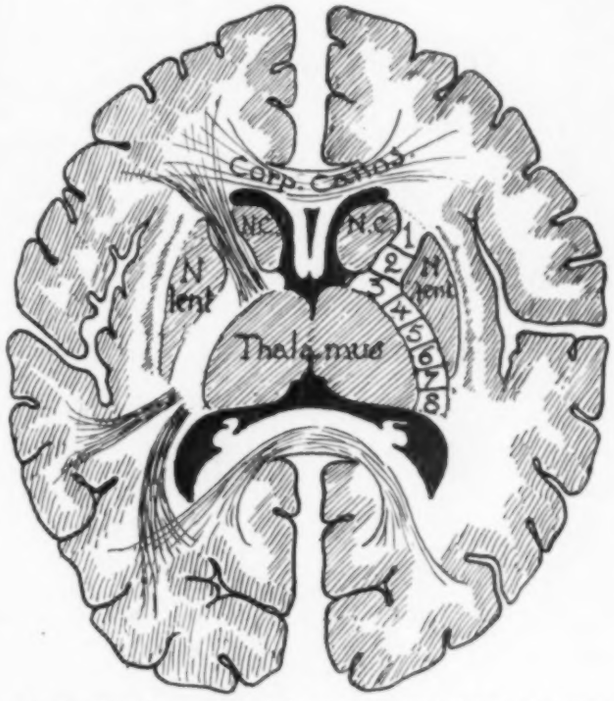

Fig. 8.—The gateway of the brain, or the internal capsule, the courses of the conduction tracts through which are shown by the numbered areas as follows: 1, frontothalamic fibers; 2, frontopontile tract; 3, corticobulbar tract (vii, xii); 4, corticospinal tract (arm); 5, corticospinal tract (leg); 6, tegmental tract; 7, occipitotemporopontile tract; 8, auditory and visual tract. The edematous deinsulation or short-circuiting of any one of these conduction cables would cause disturbance in the area to which it is ultimately distributed, while the same process involving all the conduction cables here represented would necessarily inhibit consciousness and provoke clonic spasm of practically the entire muscular system. (After Villiger, ibid., p. 142.)

FOCALIZED EDEMA AND THE EPILEPTIC SEIZURE

Our discussion needs next to consider the consequences of acid intoxication. Here, again, we may profitably pause to examine a few fundamental facts and thus possibly revise a few of our earlier concepts. Thus, the epoch-marking researches of Martin H. Fischer at the University of Cincinnati have shown that ultimate pathology, at least in many disease processes, must be found in changes in the colloids constituting the tissues. We now know that cells, cell walls, nuclei, nucleoli, capillaries and perivascular spaces, while of unquestioned importance as structure units in gross pathologic processes, were, together with the older conceptions of circulatory pressure, transudation, infiltration and osmosis, stumbling blocks in the way of comprehending many of the ultimate tissue changes incident to disease. Thus, we now know that acids developed in the tissues as a result of defective oxidation, when sufficiently developed in quantity, have a tendency to attract water (hydration). We now also know that, under such circumstances, the colloids simply suck up the water, just as do the ultimate atoms of starch, or of glue, subject only to such modifications in degree but not in kind as may be determined by the density and other properties of the tissues involved. This is edema. It may and does involve the colloids of such structures as the capillary walls, their surrounding connective tissue, cell walls, their protoplasmic contents, nerve fibers or axons and their investment membrane; in short, the given area, the area of focalized acidosis, the area in which the acid formation has gone to the extent necessary to incite this hydrating action, may become water-soaked just as the general system becomes water-soaked, for instance, in the presence of the general acidosis of eclampsia.

This brings us to a consideration of the possible acidosis edema of our epileptic subject. A careful survey will doubtless fail to give any external manifestation of the process, although certain of these subjects have a tendency to swelling of the legs when they are long on their feet, and to puffiness about the eyes on arising. Many of them complain of a sense of fulness, stopping short of actual pain in the head, while others, comparatively few, have severe headaches.

These symptoms, as well as the epileptic seizures themselves, whatever their grade of intensity, bring us to a consideration of the brain itself as the probable seat of the edema.

We recognize that the brain is made up of cells and fibers or axons; that each cell is in a sense a storage battery; that each axon is a conductor or a wire connecting with one of these batteries; that each wire or axon is able to act as a conductor only by virtue of its perfect insulation; and, finally, that these axons or

Fig. 9.—Case of tractional constriction with stasis in the duodenum due to ptosis of the colon and associated with ileac stasis as indicated by the flocculi in the central field.

wires are arranged in the brain in the form of bundles or cables, known as conduction paths. These conduction paths or striae or cables converge into the callosum, the thalamus, the pons, the corpus striatum, or, more specifically, the internal capsule which is the gateway through which pass the larger number of convergent tracts. The mechanism is rather aptly illustrated, practically paralleled, by an intercommunicating dictograph, which I happen to have in my office. The master instrument, connected with a storage battery, is on my desk and is in turn connected with other instruments located variously in the laboratories, consultation rooms and secretary's desks of the suite. The connecting wires, about twenty in number, each carefully insulated, are bundled together into a single cable. If, now, I drop this cable into some acid and then into water, or into water alone and leave it there until it is soaked through, I shall have destroyed the insulation, and I shall have done it by establishing a condition of edema. If, then, with the wires thus short-circuited and cross-circuited, I try to call up any one room, I shall simply ring up all the rooms without being able to establish intelligent communication between any of the terminal instruments and myself: in other words, I shall have provoked a sort of electric convulsion with complete isolation of myself as the center of consciousness. This is obviously what, in effect, happens in an epileptic seizure. The subcortical location of this evanescent lesion seems to be in harmony with the findings of Maxwell, who has demonstrated that convulsions in animals are excited by disturbance of the conduction paths rather than of the cortex.

THE UNITY OF EPILEPTIC PHENOMENA

We can now, in the light of this analogy, understand the phenomena of an epileptic seizure, slight or severe, by the existence of an acidosis edema, slight or severe, involving the conduction paths in the brain. We can understand the various auras, when they exist, by the deinsulating process. We can understand the involvement of various specialized fibers or axons to the exclusion of other specialized fibers or axons in this deinsulating process. We can understand the involvement of special muscles or groups of muscles in certain cases of so-called "partial epilepsies," by the more exclusive involvement of their axons in the edematous process. We can understand the short duration of the attacks by the speedy exhaustion of energy in the cells. We can understand why these patients, after an attack, must sleep as they do sleep, thus to recharge the emptied cells. And, finally, we can understand that the edema in the conduction paths is, for the time being, dissipated by the nervous explosion, or succession of explosions, just as the evanescent edema of the mucous membrane of the nose is dissipated by a sneeze, or a succession of sneezes which are, in fact, but another form of nerve explosion. From these considerations, it would seem that the epileptic phenomena are themselves the diagnostic criteria, the pathognomonic symptoms of the focalized acidosis edema for which we are searching, and furthermore, that they are one in essence and in kind. Here, then, ends our diagnostic inquiry, for here we have completed the circle, here we have come to the end of the clinical trail.

OTHER PATHOLOGIC CONSTANTS OF EPILEPSY

In the course of my surgical exploration of the abdomen in epileptics, I have found that enlargement and induration of the retroperitoneal lymphatics, especially retrocecal lymphatics, exists in 100 per cent. of cases (Figs. 11 and 13). This is ordinarily associated

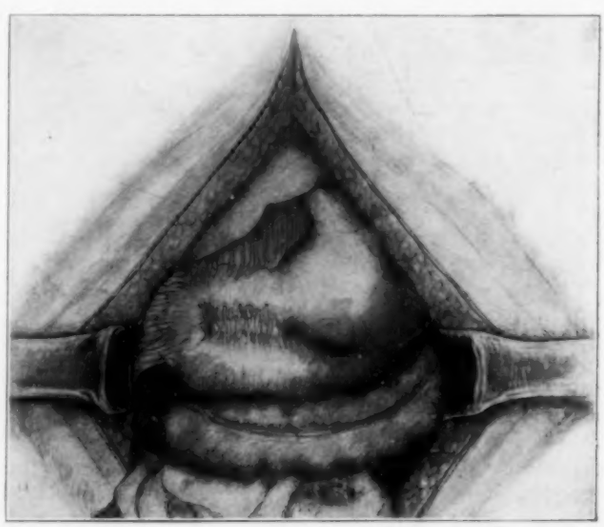

Fig. 10.—Dilatation of the duodenum with exudative periduodenitis. The dilatation is generally much more pronounced than is shown in this case.

with obvious hypertrophy of the solitary glands in all cases in which I have had occasion to make resection of the ileum (Fig. 12). A frequently pronounced, although less constant, obvious lesion is hypertrophy with resulting hyperactivity (catarrh) of the mucous follicles of the colon, giving rise to mucous colitis. In

every case in which I have had occasion to explore the upper zone of the abdomen in epileptics, I have found dilatation of the duodenum, ordinarily with resulting inflammatory exudate (Fig. 10). In certain cases it would seem that traction by the ptosic colon produces obstructive constriction of the duodenum, as shown in a roentgenogram kindly furnished me by Dr. Garrett of Buffalo (Fig. 9).

THE QUESTION OF SPECIFICITY IN EPILEPSY

The clinical phenomena arising from toxemia of intestinal origin, including those found to be due to betaiminazo, are in varying degree common to all persons with chronic constipation. They have consequently occurred with uniformity in all epileptics under my observation. But they have not been peculiar to epileptics. I have had occasion to operate on more non-epileptic than epileptic persons who were constipated. Now, why does the chain consisting of mechanical constipation, hyperabsorption, toxemia, acidosis and edema lead to convulsive manifestations in one case and to something else in other cases? Or, to put it another way, why does the edema, the final link in this pathologic chain, focalize, let us say, in the internal capsule and cause epilepsy in one case, or in the sensory centers and cause intense headaches in another, or in the wider areas of the cortex and cause simple melancholia and other mental disturbances in still other cases? Or, why in the kidneys causing nephritis? Or why in the fundus of the eye causing choked disk? Or why in the muscles and joints causing certain symptoms of the rheumatoid complex? Or why in the thyroid, or possibly, in the suprarenals or the pituitary, causing modifications not merely of their structural elements, but also of their hormones with resulting perturbation of balance in the kinetic system? In short, what is the factor that determines the locus of the focalization in each instance?

Fig. 11.—Part of specimen removed from an epileptic child of 11, showing: 1, enlarged and indurated lymphatics beneath the cecum (a much larger mass having been left beneath the peritoneum); 2, terminal (caudad) ileum; 3, head of the cecum; 4, the vermiform appendix; 5, the lower end of the ascending colon. In this case the mesocecum and the mesocolon were both very long, causing extreme ptosis with mechanical retardation of the fecal current in the ileum and cecum. This form of lymphatic enlargement in some degree is a pathologic constant of epilepsy.

The facts that, in my experience, less than 2 per cent. of epileptics have epileptic parents excludes direct heredity; that the disease occurs in all types of both men and women at once excludes both sex and temperament; that it occurs in the young and the old excludes age as a factor, and that changes in the brain are always inconstant and, when they do occur, are secondary logically eliminates both of them from etiologic relationship to the disease. Is the explanation to be found in the law of selective action, in conformity to which certain organisms or their respective bacterins, or even certain medicaments or poisons exercise a dominant, if not exclusive, effect on certain organs or structures? We know, for illustration, that meningitis, tetanus, rabies, diphtheria and typhoid are caused in this way. We know that morphin, strychnin and atropin produce their effects by selective action. We know that the whole system of therapeutics is largely built on the same principle. The possible application of this principle to the occurrence of recurrent and evanescent edema of the inner capsule is of next importance to our inquiry.

THE EPILEPTICOCCUS

In my earlier articles on this subject, I called attention to the logical necessity for the existence of some micro-organism which would at once account for the general phenomena of infection present in these cases and act as the determining factor in producing the convulsion. In an endeavor to isolate such an organism, bacteriologic study has been made of the intestinal content, the ileac glands, the mesenteric and mesocolic lymphatics, and the blood in certain of my cases. The details of these investigations are beyond my present purpose, although it is important to state that the earlier findings, when positive, were inconstant and unsatisfactory, while in the majority of instances they were entirely negative. The work was accordingly discontinued, but was later resumed in my own laboratory in charge of Dr. E. P. Hyatt. In later cases there was found in the colon, solitary glands, the lymphatics and the blood an organism which consisted of granular bodies, sometimes arranged in diplococci, sometimes in clusters, sometimes in chains, while in certain cases, all these forms were present in a single case. I felt that this was the essential organism of the disease—the epilepticoccus—but its apparent inconstancy made me hesitate in announcing my conviction. Shortly after the finding of this organism, I accidentally found that the whole field had been covered and that an organism of apparently identical morphology had been discovered by Bra[4] quite fourteen years ago. This important communication was made to the French Academy of Sciences at that time, but, marvelous as it may seem, its significance has been ignored by the profession up to the present moment, just as Mendel's great discovery of the law of heredity went without recognition until it was rediscovered by De Vries sixteen years later. The significance of Bra's work which, with illustrations and text occupied only five small pages, will be recognized when it is remembered that he isolated the organism,

4. Bra: De la presence d'un parasite dans le sang des epileptiques, Compt. rend. Acad. d. sc., Jan. 2, 1902.

from the blood in seventy out of 100 cases; that he found it only in epileptics; that he found it in them only preceding or immediately following a crisis; that it entirely disappeared from the blood in the interval; that it was often demonstrable in the fresh blood; that it was cultivable in ordinary mediums; that it was reproduced when injected into the blood of rabbits, and, finally, that rabbits thus treated developed convulsions which in every particular were identical with grand mal seizures in the human subject—all of which has been confirmed at my own hands. He emphasized the fact that this organism seemed to sustain the same relation to the epileptic seizures that the plasmodium does to the malarial crises. This fact and the associated disappearance of the organism from the blood during the interval explains why our findings were negative in so many of our early cases from which the blood was taken irrespective of attacks, and why they are positive in our later cases. The further study of this organism in my own practice and its relation to a rational therapy must be the subject of a subsequent report. In this connection, however, it is important here to state that it has come about in my practice that, *as a means of ultimate diagnosis, the epilepticoccus has the same relative importance to epilepsy that their respective etiologic organisms have to malaria, tuberculosis, tetanus, diphtheria or typhoid.*

Fig. 12.—The interior of the terminal (caudad) ileum from an epileptic subject, showing enteritis with marked hypertrophy of the solitary glands—a condition of frequent occurrence, although not a pathologic constant in epileptics.

SECONDARY CHANGES IN EPILEPSY

There are certain changes in both the intestines and the brain of epileptics that may, I think, be looked on as purely secondary, especially in view of the now demonstrated infectious nature of the disease. Those in the intestines are very marked, although there is but one of them that I have come to look on as a pathologic constant, the others being very variable. Dilatation of the duodenum with chronic duodenitis characterized by exudation and adhesion and involving the first and second parts of the duodenum occurs in 100 per cent. of epileptics in whom I have had occasion to make surgical exploration of the upper zone of the abdomen. I look on this fact as significant, in view of the discovery of the organism of Bra in the retroduodenal lymphatics in several of my cases. The constant presence of this dilatation with periduodenitis in epileptics is furthermore significant, in view of the additional fact that it but rarely occurs in nonepileptic persons who are constipated. In certain cases similar exudates are encountered at the duodenaljejunal juncture, the head of the jejunum being at times adherent to the mesocolon, to the extent of an inch or more from the foramen. In a few instances, I have found similar exudates involving the lower and — in one case as much as the lower 12 inches — of the ileum, with complete agglutination of proximal surfaces.

CONCLUSIONS

The clinical phenomena which I have here recorded, the pathologic constants which I have here presented, considered in connection with the now demonstrated organism, especially in the absence of facts of contrary significance, seem to justify tentative conclusions as follows:

1. Idiopathic or essential epilepsy is an infection.
2. The infecting organism, whatever may be its primary habitat, finds its way under circumstances of forced absorption from the alimentary canal into the blood.
3. The conditions that enforce absorption from the alimentary canal consist in mechanical distortions with resulting constipation in the form of either obvious or masked stasis.
4. These conditions point to a logical line of treatment as follows: (*a*) The organism should be isolated in each case with reference to the development of an antigen and the possible immunization of the patient. (*b*) In the absence of such immunization or in recurrence after apparent immunization, but in certain otherwise favorable cases, the mechanical conditions of the intestines responsible for the enforced absorption should be surgically corrected and a stop thus put to the farther intake of the organisms by restoring the normal drainage of the bowel. (*c*) Postoperative treatment should be instituted to neutralize and eliminate the residual infection already established in the glands and blood of the patient. (*d*) In this connection it is of the highest importance to insist that the intercurrent chronic acidosis, which exists without exception in these cases, shall be as nearly as possible

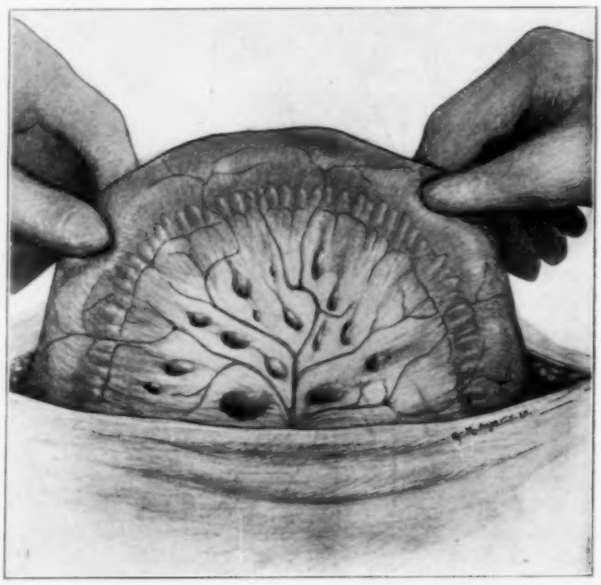

Fig. 13.—Enlargement of retrojejunal lymphatics in an epileptic girl of 16 with grand mal seizures of great frequency and severity.

reversed as can sometimes be done, although only temporarily, by appropriate treatment preliminary to surgical interference. Failure to observe this precaution will result in a high surgical mortality. The details of this treatment must comprise the subject-matter of a later report.

Union Central Building.

A CONTRIBUTION TO THE SUBJECT OF SKULL FRACTURES

ANALYSIS OF ONE THOUSAND CASES AT THE COOK COUNTY HOSPITAL, AND A REPORT OF SEVENTY-FOUR CASES EXAMINED AT NECROPSY

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Medical history, in its earliest records, shows a knowledge of skull fractures, and volumes have been written on the subject, yet our views are constantly changing regarding this condition, and the change is in direct proportion to the additions made to our knowledge through experimentation, research and clinical experience.

Through the courtesy of the coroner's physicians, the late Dr. Warren Hunter and Dr. E. R. LeCount, I have been able to observe and secure notes and drawings from necropsies of seventy-four consecutive cases of skull fracture. My purpose is to analyze carefully these cases seen at necropsy and to consider the clinical histories of 1,000 cases treated at the Cook County Hospital.

Skull fracture is one of the most common injuries, and there are about 100 cases admitted annually into Cook County Hospital. When one realizes that the mortality, as shown by these records, is 53 per cent., it stimulates serious thought toward a betterment of these results.

I am desirous of considering first the mechanism of skull fracture and to advance a new theory as to the manner in which the applied force produces the solution of the continuity of the bone. The mechanism of fractures of the skull is a subject that has commanded a great deal of interest, and extensive investigations have been carried on by many workers who have spent much time in experimental study and clinical observation, directed toward the elucidation of the principles governing this condition. The present and accepted theories regarding the mechanism are based on and embody two definite principles:

1. The inbending of the skull at the point of contact of the blow.

2. The bursting of the skull at a point some distance from the applied force.

Fig. 1.—Fracture in Case 1. On opening skull about 8 ounces of soft clots and an equal amount of liquid blood were found external to dura over right hemisphere. A linear fracture extended through occipital bones from above downward and from right to left, continuous with left lambdoid suture. The inner plate had evidently sprung inward and back, catching a portion of the dura.

The brain showed little injury.

Posterior branch of middle meningeal had been injured, and the brain was slightly lacerated about one-half inch from the sulcus centralis, corresponding to upper extremity of fissure of Rolando on right side. Cerebral vessels at this point torn. Scalp showed contusion over right occipital. Hematoma beneath scalp at this point.

Fig. 2.—Fracture in Case 2. No sign of external wound. As scalp was incised, a hematoma was revealed over left parietal region. On removing skull cap a clot containing about 4 ounces of blood was found, covering and compressing slightly the right motor area. It seemed to come up from base, and no rupture of middle meningeal could be demonstrated. A clot of several ounces occupied right middle fossa and had produced a marked softening of the brain. Brain saved and preserved at college. A fracture of base was revealed. It commenced externally at base of mastoid process of left side and passed downward to tip, splitting it into two equal parts; the fracture then passed inward along anterior aspect of petrous portion, crossing the hypophysial fossa and terminating in middle cerebral fossa of right side.

Fig. 3.—Fracture in Case 3. The scalp over left side of head had been shaved, and a lacerated wound over left occipital region existed. No operation on skull. Left outer ear filled with dried blood. Removal of skull cap exposed a dark clot over left motor area and a tear in anterior branch of middle meningeal. A large quantity of bloody fluid escaped. Brain showed a laceration of both temporal lobes on inferior outer aspect. There was extensive hemorrhage beneath pia over anterior portion of right hemisphere. The fracture commenced on left parietal and extended downward just posterior to petrous, crossing to opposite side just in front of foramen magnum. Another line of fracture extended anterior to petrous to foramen rotundum, and from there forward to orbital plates on both sides.

The bursting theory has to do largely with fractures of the base, and has for its foundation the underlying physical law that when a hollow sphere is compressed, the tendency is for it to fracture in a meridian parallel to the applied forces. This has been worked out carefully by Wahl and others, and shown to occur actually in the skull when it is compressed between two fixed points, as in a vise. I have presumed to take issue with the practical application of the latter theory.

Experimentally this bursting occurs, but clinically the injury is rarely such as to give us a force applied at two given points, as obtains in the vise. If the skull were a perfect hollow sphere, with walls of equal thick-

ness, and we regarded the articulation with the condyles as one of the fixed points, then the bursting theory might be more acceptable. The skull is not a perfect sphere, and its walls vary in thickness, the thinnest part corresponding in general to the middle fossae, which are the most common sites of fracture. In seventy-four cases that I observed at necropsy the middle fossa was involved fifty-four times. In all the experimental work that has been done, the investigators have not given sufficient weight to the fact that the base of the skull has a fixed point at its articulation with the atlas. Manifestly when a blow is received at any point on the vault there is a counter inbending force at the articulation of the condyles with the atlas.

A careful study of seventy-four cases of fracture of the skull at necropsy has convinced me that the fractures of the base are not produced by a bursting force, but are due to a direct inbending force applied through the articulation of the condyles and atlas. I have observed repeatedly that the fractures occupy the same position and are of about the same extent, regardless of location of the injury on the vault. The thinness of the skull through the middle fossa accounts for the frequent fracture at these sites.

In all the examinations I have not observed a fracture of the posterior or occipital fossa that was not a direct continuation of a fracture of the vault. There were twenty-seven such cases observed in this series of seventy-four.

In a few rare injuries, in which the skull is caught between two fixed points, such as the bumpers of cars or between a moving car and a platform, the bursting force is a factor. I believe, however, that my observations and deductions justify me in the assumption that in the large majority of fractures at the base the bursting force is not a factor, and that the true mechanism is the counter force at the condyles producing a fracture by inbending, or that the basal fracture is a direct extension of the fracture from the vault. In these seventy-four cases, there was an association of fractures in the vault and base in fifty-four cases. This is a higher percentage than is usually given, but is made from necropsy examinations. The analysis of the 1,000 clinical cases shows an observed association in a much smaller percentage, the proportion being 33 per cent. vault, 34 per cent. basal and 33 per cent. associated. The extent of the fracture is directly dependent on the amount of force applied.

A fracture of the inbending type produces more extensive separation of the inner table, which fact can be illustrated by the break on the convex surface of a green stick. When the cranial fracture is produced by a high powered bullet at a close range, a hydrodynamic force enters in, resulting in a sudden expansion of the brain tissue. When a modern jacketed bullet is fired at close range, a complete shattering of the cranial structures may occur. If a skull be fractured by a bullet, it is possible to distinguish between the wound of entrance and the wound of exit. The table which is last penetrated by the missile shows the greater amount of radiating fracture. This is sometimes important in medicolegal cases. The latter condition was noted in the two cases of bullet wounds in the seventy-four cases observed at necropsy.

The classification of cranial fractures into simple and compound fractures has a direct bearing on the diagnosis, prognosis and treatment.

Fig. 4.—Fracture in Case 4. Signed out as fracture of femur and delirium tremens. An ecchymosis beneath right eye led to the opening of skull. On opening the skull a rather firm dark clot was found over motor area, extradural. The dura was injured in opening the skull in such a way that an injury to the middle meningeal could not be positively identified, although that was the probable lesion. Brain substance did not show injury at any point.

No fracture of inner plate or external could be found on right side. On removing dura from left petrous portion a small clot was revealed, occupying anterior surface. Removing this a small nondepressed fracture was discovered at this point, anterior surface of petrous portion at junction of inner and middle third. The fracture was in the shape of a triangle, each side being about one-half inch.

Fig. 5. — Fracture in Case 5. Patient had had a distinct free interval of several hours. Two small trephine openings were found over right motor area. No clot or injury to brain at this point. No fracture of vault revealed. On removing cap a large firm subdural clot, containing 10 ounces, was found covering and compressing the left (anterior) frontal lobe and extending back over motor area. No macroscopic change in brain at this point, except evidence of compression. Both ventricles were distended with several ounces of bloody fluid. The medulla showed a small hemorrhage.

The base was fractured. In posterior fossa a fracture extended from a point to left of occipital protuberance downward and to the right to foramen magnum. The left middle fossa showed a short fracture involving the inner portion of petrous.

Fig. 6. — Fracture in Case 6. The scalp showed no break in its continuity. Over right parietal region there was a contusion. The scalp was raised from skull by a large effusion of blood. Left ear was filled with blood. No subconjunctival hemorrhage. On removing scalp an extensive fracture of vault was found extending from mastoid to mastoid. A separation of 1 cm. existed with tearing of pericranium. On removing skull cap a thin clot was found covering (anterior) frontal and motor area of right hemisphere. The left middle fossa contained a clot, and the brain was slightly lacerated at this point. Removing brain a fracture was revealed extending from line of fracture of vault on right side across petrous portion and into left middle fossa. Another short fracture crossed the petrous portion on left side.

In compound fractures of the base, we are able to accomplish little in the way of prevention of infection. In compound fractures of the vault, we are in a position to combat infection to a material extent, and of this I shall speak later.

A diagnosis is of course much more easily made in fractures of the vault if the continuity of the soft tissues is destroyed than if the scalp is intact.

In the 1,000 clinical cases here analyzed from the records of Cook County Hospital, those of the vault were compounded in about 35 per cent.

From a clinical point of view there is some logic in the classification of skull fractures according to their situation at the base or on the vault, although investigation convinces me that fracture of the base is much more frequently associated with fracture of the vault than is commonly supposed. Brün, in an analysis of 470 cases, states that they are associated in from 70 to 75 per cent. of injuries. In my analysis of seventy-four cases at necropsy there were sixty-five of the base, sixty-three of the vault, and an association of both types of fifty-four cases, or 72.9 per cent. In the 1,000 clinical cases an association was recognized in only 33 per cent., showing the difficulties of diagnosis of the exact location of line of fracture.

Fig. 7.—Fracture in Case 7.—No external sign of injury. On opening the skull there was an escape of several ounces of seropurulent fluid, extradural. The dura covering the whole left hemisphere was covered with a purulofibrinous exudate. As the brain was lifted from the cranium, a seropurulent fluid welled up through the foramen magnum from around the cord. Over the anterior frontal lobe the dura was thickened and covered with a necrotic exudate. On the frontal bone corresponding to this area the inner plate was slightly necrosed. This represented the position of a localized collection of pus. The brain at the upper end of the central sulcus showed some softening over an area of about 3 inches, one-half inch in depth. There was no pus in either middle ear or corresponding mastoid cells. The cribriform plate of the ethmoid and the orbital plate left of the frontal showed small linear fracture. The left orbit was full of pus, as were the left frontal sinus and left ethmoidal cells.

Fig. 8.—Fracture in Case 8. Said to have been struck by street car. Postmortem, right eye showed a subconjunctival hemorrhage. Right external ear filled with dried blood. Over left occipital bone there was a lacerated wound 2 inches long which had not been dressed. No fracture of vault. On removing skull cap a large amount of bloody fluid escaped.

There were hemorrhages over nearly the entire surface of left brain beneath pia, giving the appearance of a hemorrhagic pachymeningitis. There was a laceration of right lobe of cerebellum and of both anterior frontal lobes on inferior aspect. Brain preserved at college.

The base was fractured, the line of fracture beginning at point of scalp wound just to the left of the occiput and extending downward and forward across the posterior fossae to right middle fossa, crossing petrous and ending near foramen rotundum; another irregular fracture existed in right middle fossa.

Fig. 9.—Fracture in Case 9. Man, apparently about 30, injured in railroad wreck in which a number were killed. Compound fracture at right wrist and numerous contusions on body.

No evidence of injury to head, except dried blood in right ear; none in left ear. No hematoma beneath scalp. No evidence of fracture of vault. On removal of skull cap, there was no escape of bloody fluid and no sign of hemorrhage within skull.

Careful examination of brain failed to show a lesion.

On removing dura from base a fracture was found beginning at base of mastoid on one side and extending in nearly a straight line to base of mastoid on opposite side. The line of fracture followed the anterior surface of each petrous, splitting the hypophysial fossa. The sections of skull were freely movable at line of fracture. The mastoids were completely divided from base to tip. There had been no hemorrhage.

DIAGNOSIS

In the diagnosis of skull fractures, as in the diagnosis of any pathologic condition, importance must be attached to the history. This usually tells us the kind of an injury that the patient has received, whether it be a blow on the head or a fall from a height, and obviously the surest aid in recognizing a fracture. This is especially true of the stereoscopic plates, which frequently show a fracture that a single plate fails to reveal.

The signs of general intracranial pressure produced by bleeding or edema are usually present, as manifested by unconsciousness, slow pulse, embarrassed respiration, high blood pressure, choked disk and vomiting. These signs are more or less apparent and marked, depending on the amount of hemorrhage and edema.

The age of the patients varies within wide limits, the youngest being 3 hours old, and the oldest 81 years. A large majority (68.7 per cent.) of them were between the ages of 30 and 55.

If there be extensive lacerations of the soft parts with an exposed bone showing lines of separation, with displacement of the fragments, then the diagnosis may be made at a glance. When, however, the soft tissues are intact, the proposition becomes a more difficult one. It is almost impossible to palpate a depression in the skull through an intact scalp with any degree of certainty. An exudate beneath the fascia simulates the edge of the bone so closely that even the experienced clinician may be deceived.

The cracked pot sound elicited on percussion has not proved of great value to us. The roentgenogram is

allows us to estimate approximately the amount of force applied. This 1,000 cases shows that 384 patients received their injury by falling from a height, and 311 were struck on the head. Thirty-eight cases were due to gunshots. The cause of injury of 267 cases was not recorded.

The focal signs are entirely dependent on the area of brain that may be involved from laceration or pressure from blood clot. Signs of compression or focal signs of cortical injury are strongly indicative of skull fracture, but may occur independent of bone injury, being caused by hemorrhage or laceration of brain tissue.

The free interval of consciousness subsequent to the primary period of unconsciousness and followed by deep unconsciousness indicates a progressive active hemorrhage and pressure. This results most frequently from injury to the middle meningeal artery, and this artery is rarely involved without an associated fracture.

In fractures of the base, additional evidence is had through free hemorrhage from ears, nose, mouth or into the orbital cavity. Continuous bleeding from the ear following an injury to the head is almost pathognomonic of a fracture of the base. The escape of serospinal fluid or brain tissue is pathognomonic of fracture. In this series of 1,000 cases, blood and spinal fluid from the ears occurred in 316, or 31.5 per cent. of the cases, bleeding from the right ear 131, from the left ear 146, and not stated eighteen. Free bleeding from the orbital cavity occurred in ten cases. Unmixed cerebrospinal fluid from the ears occurred in 2 per cent., or twenty-one cases. It came from both ears in three cases, from the left in thirteen cases, and from the right in five cases.

Free bleeding occurred from the mouth and nose in 172 cases, from the nose in 118 cases, and from the mouth alone fifty-three cases, or a total of 343.

The blood from a broken bone at the base may become diffused through the soft tissues and appear later as an ecchymosis at various sites, depending on the location of the fracture. These later appearing ecchymoses near the seat of fracture are observed at the external angular process or over the mastoids or about the occiput, and it is my conviction that they are very strong presumptive evidence of the existence of a basal fracture, even if they are unassociated with coma or definite focal signs.

Occasionally an involvement of one of the cranial nerves is the only sign that is present indicating fracture. The nerve most commonly involved is the sixth. A paralysis of one facial nerve is recorded in thirteen cases in this series.

The advisability of making a spinal puncture in all cases of suspected skull fracture comes into question. When blood is found in the spinal fluid, it is highly presumptive evidence of the existence of a fracture. The procedure, however, is by no means free from

Fig. 10.—Fracture in Case 10. Signed out as skull fracture. No evidence of an external blow; no contusion. On opening the skull about 8 ounces of dark fluid blood escaped. A number of small clots beneath the dura and over the cortex of both hemispheres.

On removal of brain, several ounces of clotted blood were found in right posterior fossa and in left anterior fossa. In the right lobe of cerebellum was a laceration 2½ inches long by three-quarters inch deep on the inferior surface. A lacerated wound of about the same extent existed on the inferior surface of the left frontal lobe. Brain substance otherwise intact.

An extensive fracture of base existed involving all these fossae. Fracture of posterior fossae ran into foramen magnum. Fracture crossed left petrous portion. No ear bleeding recorded. Drum appeared intact. Both frontal orbital plates and lamina cribrosa involved. The right orbital plate had caught a portion of dura in the fracture to the extent of about 1 inch.

Occipital fragment moved on movement of head and might have been immobilized, by fixing neck.

Fig. 11.—Fracture in Case 11. On cutting through the scalp a good-sized hematoma was found in soft tissues of scalp and beneath the pericranium. Externally a linear fracture appeared, extending from the superior temporal ridge on the right across the frontal, parallel to and just anterior to coronal suture, reaching the temporal and extending to the base. A fracture at right angle extended anterior through left frontal to orbit. On removing the cap a large dark firm clot—extradural—was found occupying a position over and compressing the right (anterior) frontal lobe. This clot weighed about 10 ounces (of blood) and extended to the motor area on right side and over the right frontal (anterior) convolutions. On removing the brain it was found intact, except for compression from clot. There were no lacerations and no hemorrhages in substance. The base showed several lines of fracture. The left orbital plate of frontal was comminuted and the orbit filled with clots. A fracture continuous with the one on vault extended across the left middle fossae, involving petrous portion, and passed backward to foramen magnum.

Hemorrhage came from tear in right anterior branch of middle meningeal.

Fig 12.—Fracture in Case 12.—Over right occipital region there was an incised wound of scalp about 4 inches long closed with silkworm-gut sutures. The scalp tissues in this region showed a suffusion of blood. As the scalp was removed, a linear fracture of vault was revealed, extending from right parietal eminence downward and forward across temporal bone outer canthus of right eye, involving frontal bone. Just above the external auditory meatus there was a fragment of bone 2 cm. long and 1 cm. wide completely loosened. As the cap was removed a firm, dark clot containing about 6 ounces of blood was found compressing the motor area and anterior frontal convolutions. The posterior branch of the middle meningeal was found lacerated just above the division of main artery. Clot was mostly extradural, although a few scattered clots were found beneath dura. The brain suastance was somewhat lacerated at a point opposite the small loose fragment. On removing the brain the middle fossa on left side was found filled with blood clot and the left temporal lobe was completely softened and disintegrated. There was no fracture of base at this point. The orbital plate of frontal on the right side was fractured, and orbit contained a clot behind eye. Sectioning of brain failed to show any change except as mentioned; ventricles contained only normal amount of clear fluid; cerebellum and medulla showed no change.

danger, especially in those cases in which there is a marked increased intracranial pressure. The danger is that with the relief of pressure within the spinal canal, the medulla and pons may be forced into the foramen magnum and constricted sufficiently to cause immediate death. Therefore, it is not our routine practice to do a spinal puncture in all cases. It is not done if the diagnosis can be made certain from other signs and symptoms. This procedure is reserved for that class of cases in which a patient is picked up on the street in coma and remains unconscious with no obtainable history of injury. If a positive diagnosis is not arrived at from other evidence, a spinal puncture is done.

The spinal fluid may show blood from lacerated brain tissue which exists without fracture. Escape of cerebrospin l fluid is pathognomonic of a fracture. It is found in a small percentage of cases, having been observed in 2 per cent. of this series of 1,000 cases.

Vault fractures with recovery, average respiration 22.

Vault fractures terminating fatally, average respiration 32.

Vault fractures with depression terminating in recovery, average respiration 24.

Vault fractures with depression terminating fatally, average respiration 32.

Basal vault fractures associated with recovery, average respiration 24.

Basal vault fractures terminating fatally, average respiration 40.

This shows that in the fatal cases of all types the respiration average was consistently higher.

The temperature curves in the thousand cases do now show any positive diagnostic evidence. In the patients who recovered the average temperature was below 100 F. The average temperature in the fatal cases was 102. In seven cases, however, the temperature was above 105, reaching 107 in two cases.

Fig. 13.—Fracture in Case 13. Patient had been operated on. There was a horseshoe flap over right temporal region, corresponding to attachment of temporal muscle.

Beneath flap, skull had been cut away, leaving an opening about 8 cm. in diameter, with a trephine opening posterior to it. The bone had been replaced. On removing brain a fracture from opening extended through middle fossa to within 2 cm. of foramen rotundum. The brain showed signs of compression from clot, which had evidently been removed. The brain tissue showed extensive laceration at point opposite removed bone, the laceration extending toward inferior aspect.

Fig. 14.—Fracture in Case 14. Patient had been operated on. Horseshoe flap over right temporal region almost identical with that in Case 11.

On laying back the flap, temporal muscle was found sutured with catgut over an oval-shaped opening in skull about 6 cm. in diameter. Fracture extended forward from this opening to outer canthus and downward across middle fossa, crossing petrous portion and terminating in foramen magnum. The brain tissue was severely lacerated in both lobes occupying middle fossae. Hemorrhage beneath pia had taken place over entire right hemisphere. No gauze packing in skull opening.

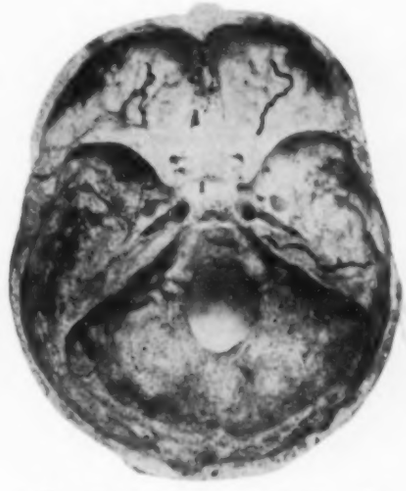

Fig. 15.—Fracture in Case 15. The scalp was intact, but showed a hematoma over right parietal region. On removing the scalp an irregular triangle shaped depressed fracture was found in right parietal region. On removing skull a diffuse clot was found covering brain beneath site of depression; the posterior branch of middle meningeal did not seem to be involved, the hemorrhage apparently coming from the smaller vessels of the pia. On removing brain a fracture was found in the base on superior surface of petrous portion of right temporal. A small linear fracture was found on both orbital plates of the frontal. The left middle fossa showed no fracture, but contained a good-sized blood clot, and the brain was lacerated at this point. The man also suffered from a fracture of sternum with hemorrhage into chest.

Emphysema into the soft tissues may occur about the frontal sinuses or over the mastoids if the air cells are widely opened. No case of emphysema was noted in this series.

An analysis of the pulse rate in this thousand cases is given in Table 1, and is most interesting and instructive. It is surprising to note how infrequently it remains slow. I believe that these records are reliable in this particular, for the nurses at Cook County Hospital are unusually well trained, accurate and efficient.

The pulse rate in cases of combined vault and basal fractures recognized as such clinically were consistent with these records, showing that the average pulse rate was higher in the fatal cases and that the number of cases with a slow pulse was relatively small.

The records of the respirations in this thousand cases fail to show a striking characteristic change. A summary of the records shows the following:

The pupillary changes occurring in 1,000 cases are given in Table 2.

The eye protruded in nine cases. There is no note made of a single case of pulsating exophthalmos.

The patellar reflexes were increased in sixty-seven cases, and absent in fifty cases, with no change recorded in the others.

A Babinski reflex was observed in fifty-five cases, and a Kernig sign in eight cases. General convulsions were noted in thirty-two cases. Clonic convulsions of the arm occurred in six cases, of the leg in two cases, and of the face in seven cases.

Rigidity of the legs was observed in twenty-nine cases and of the neck in twenty-nine cases. Complete muscular paralysis was observed in the muscles of the

face in forty-seven cases, in the muscles of the legs in fifty-five cases, and in the muscles of the arms in fifty-eight cases.

TABLE 1.—ANALYSIS OF PULSE RATE IN ONE THOUSAND CASES

Nature of Fracture	Number of Cases	Average Pulse Rate
1. Fractures of the vault without depression, with recovery (average pulse rate 71)	6	50
	8	60
	14	70
	23	80
	18	90
	14	100 plus
2. Fractures of vault without depression resulting fatally (average pulse rate 113)	1	50
	1	60
	1	80
	1	90
	12	100 plus
3. Fractures of vault with depression with recovery (average pulse rate 92)	1	50
	8	60
	24	70
	39	80
	26	90
	51	100 plus
4. Fractures of vault with depression terminating fatally (average pulse rate 116)	2	40
	3	80
	1	90
	25	100 plus
5. Fractures of base with recovery (average pulse rate 81)	4	50
	16	60
	15	70
	21	80
	13	90
	10	100 plus
6. Fractures of base with death (average pulse rate 105)	1	14
	6	40
	2	50
	9	60
	17	70
	25	80
	22	90
	119	100 plus
	1	200

TABLE 2.—PUPILLARY CHANGES IN ONE THOUSAND CASES

Pupillary Changes	Side	Number	Average Per Cent.
Dilatation of the pupil.....	Left.....	35	19.5
	Right.....	37	
	Unequal pupils..	123	
Loss of light reaction.....	Both.....	72	8.5
	Right.....	8	
	Left.....	5	

In this series of 1,000 cases, vomiting was a common symptom, and occurred in 361, or 36 per cent. of all cases. In eleven cases the vomitus was almost wholly blood.

104 South Michigan Avenue.

Baby Week Campaign.—The Children's Bureau of the United States Department of Labor has issued a bulletin presenting in detail practical methods of organizing and carrying on a baby week in cities, towns and rural communities. A campaign of publicity through newspapers and meetings, celebrations in schools, the collection of public welfare information, and follow-up work after the baby week is over, are some of the features suggested. An infant welfare exhibit might also be made. During the week thorough physical examination of babies should be made according to some definitely outlined plan. The physician should hold interviews with the parents, in which the needs of the baby would be pointed out and the general hygiene best suited to the baby under consideration, discussed. All this work has one common aim, to focus attention on the individual baby. Copies of the bulletin may be obtained free of charge on application to the Children's Bureau, Washington, D. C.

A CASE OF FATAL DIABETIC COMA WITHOUT DIACETIC OR BETA-OXYBUTYRIC ACID

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This case of fatal diabetic coma without either diacetic or beta-oxybutyric acid in the urine seems of sufficient interest to be placed on record, because of the general tendency to trust to the Gerhardt reaction as a sign of impending coma in cases of diabetes.[1]

History.—Mrs. H., aged 53, hairdresser, referred by Dr. Jackson of Hicksville, Ohio, entered St. Joseph Hospital Nov. 5, 1913. The family history was entirely negative. The patient's health had always been good. She had typhoid fever at 16 and again (?) at 43, and pneumonia at 45. There had been no other severe illnesses. Menstruation began at 16; there had been two pregnancies; one resulted in a miscarriage at three months, and there is a son living at 33. The menopause occurred at 49. The patient's health has been good during and since, until the beginning of the present illness. Two months ago the patient began losing strength and weight, and was quite thirsty—"could not get enough." Nocturia occurred five or six times. There was no polyphagia, but, on the contrary, complete anorexia. The patient had lost 30 pounds in weight since the beginning of her illness, and had considerable dyspnea, and *constant* nausea, sometimes extreme, but without vomiting at any time.

The symptoms and the general condition had grown progressively worse from the onset of the disease. At the time of my examination the patient was quite weak, but her general appearance was not bad. She had complete anorexia, and ate practically nothing.

Physical Examination.—The heart was moderately dilated (2 cm. to left of the midclavicular line); there was some tenderness corresponding very closely to the area of the pancreas. The pulse was 110, and the temperature of normal range throughout. The blood pressure (systolic, sitting) was 120.

The blood examination revealed the hemoglobin as being 80 per cent., leukocytes 7,000, polymorphonuclears 76, small lymphocytes 18, large lymphocytes 4, transitional 1, and eosinophil 1.

The urine was acid, with a specific gravity of 1.025. Both albumin and sugar were present. Urea, 0.5 per cent., was equal to 5.4 gm. in twenty-four hours. Both indican and *acetone* were absent.

Microscopically, there were many hyaline and granular casts, leukocytes and epithelial cells.

At this point the relative importance of the diabetes and Bright's disease, aside from the light shed by the history, was very problematic.

The phenolsulphonephthalein test showed, first hour, 31 per cent.; second hour, 12 per cent.; total, 43 per cent.

During the first twenty-four hours in the hospital the output of urine was 3,100 c.c., and varied thereafter from about this figure up to 4,000. November 12, the seventh day, for example, the quantity was 4,120, with 3⅓ per cent. of sugar, a total of 137 gm. On this day a careful analysis of the blood was made, and it was found to contain 0.66 per cent. of sugar and 0.02 per cent. of urea. Acetone was constantly present after the first examination, but neither diacetic nor beta-oxybutyric acid could be detected at any time. A final careful qualitative test was made for both in the urine withdrawn by catheter when the patient was moribund.

On account of the anorexia, the dietetic treatment was, of course, without significance. Sodium bicarbonate was given in as large doses as could be tolerated, which was about

1. J. Rosenbloom (New York Med. Jour., Aug. 7, 1915) reports three fatal cases of diabetic coma without beta-oxybutric or diacetic acid or even acetone in the urine differing in this last point from the case here reported.

8 gm. daily. After three or four days the patient became at times distinctly somnolent.

On the morning of the eighth day the nurse reported that the patient was apparently all right at 5:30, but two hours later was found in deep coma.

As soon as arrangements could be made, about 9 a. m., she was given an intravenous injection of 1,300 c.c. of 2.5 per cent. solution of sodium bicarbonate. At the beginning of this injection the systolic blood pressure was 75 and remained practically uninfluenced by this injection, or anything else done up to a short time before death. It was impossible to rouse the patient at all before the injection, but when nearly completed she opened her eyes and asked what we were doing. She was less comatose for a few hours, but soon relapsed into her former condition. At 5:30 we gave her 900 c.c., containing 1 ounce of sodium bicarbonate. Slight improvement again followed for a brief time, but coma soon deepened, and she died about 11 p. m.

No necropsy could be obtained.

For some unaccountable reason the ammonia excretion was not estimated, and thus was missed the most reliable criterion of an acidosis. The clinical picture, however, was unmistakably that of the "alcoholic type" of diabetic coma. It was not Kussmaul's air hunger, nor was it the circulatory failure of "diabetic collapse." That it was really a coma from some type of acidosis is indicated by the transient improvement following the intravenous injection of large quantities of sodium bicarbonate. But to what was the acidosis due?

Futcher[2] says: "Without qualification we can at present say that the acid intoxication of diabetic coma, or 'acidosis,' as Naunyn calls it, is due to the action of beta-oxybutyric acid," thus indorsing Stadelmann's[3] dictum that "diabetic coma occurs only when the urine contains beta-oxybutyric acid." This case seems to prove that there are exceptions to this rule.

There would seem to be three hypotheses available for explanation of this case:

1. The coma was due to beta-oxybutyric acid which was so rapidly oxidized that only acetone remained in the urine.

2. The coma was due to acetone.

3. The coma was due to some unknown derivative of the acetone group.

The first hypothesis seems entirely untenable, inasmuch as beta-oxybutyric acid is readily excreted by the kidneys in considerable amounts long before a fatal coma develops. Even if it were conceivable that the beta-oxybutyric acid was all oxidized, the next oxidation product, diacetic acid, would certainly be present. The absence of both these acids appears to me to be conclusive proof that the coma was not due to beta-oxybutyric acid.

Was it due to acetone which was freely excreted and presumably contained in large quantities in the blood? The evidence on this point is somewhat conflicting. It is true that a number of observers have taken acetone in considerable doses without marked symptoms.

Sollmann[4] quotes Albertoni to the effect that it is faintly hypnotic, but causes so much dyspnea that it is not used internally. This would seem to indicate very decided toxicity. When taken by the mouth, it should be remembered that it has to run the gauntlet of the laboratory of the liver, whatever effect this may have. Rhamy[5] produced drowsiness or even stupor and other toxic phenomena and fatty changes in the liver and kidneys by hypodermic injections of acetone in guinea-pigs. Acetonemia is apparently entitled to very serious consideration in such a case.

The third hypothesis, although entitled to thoughtful consideration, is not supported by any available facts so far as I know.

The principal clinical interest attaches to the absence of Gerhardt's reaction, showing that this cannot be relied on to exclude impending coma. Neither can the low blood pressure which Ehrmann[6] says is a nearly constant feature of the precoma state. In this case the systolic pressure was 120, falling to 75 only when coma had actually supervened. Considerable scientific interest, however, attaches to the absence of beta-oxybutyric acid which was determined in my laboratory by the Black method,[7] as well as the absence of the intermediate body, diacetic acid and the presence of large quantities of acetone.

2. Futcher, in Osler's Modern Medicine, 1907, i, 786.
3. Stadelmann, in Williamson's Diabetes Mellitus and Its Treatment, p. 279.
4. Sollmann: Pharmacology, p. 443.

AN UNUSUAL CASE OF APPENDICITIS

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Every case of appendicitis is of some clinical interest to surgeon and physician alike; but some cases stand out on account either of the operative findings or of the complications which follow. It is to the latter class that the following case belongs; and I believe its report will be read with some interest, particularly since it terminated in a complete recovery.

History.—W. M., man, aged 21, walked into my office, March 15, 1915, leaning forward and very lame apparently in the right hip, saying he had appendicitis. He had been taken sick, March 10, with indigestion, pain in the stomach and vomiting; March 14, there had been severe pain in the lower right flank, but at present the pain was felt over the entire abdomen. The temperature was 99, pulse 140, abdomen rigid. Vomiting had ceased the day before. The bowels had acted in the morning from a dose of salts taken the night previous. On a diagnosis of gangrenous appendix, possible rupture and peritonitis, the patient was taken at once to the Mary Gates Hospital, and prepared for operation.

Primary Operation.—The abdomen was opened through the usual right rectus incision. When the peritoneum was opened, a mass of gangrenous omentum was encountered which was ligated and resected. The cecum was adherent laterally and anteriorly. I did not deem it safe to liberate the adhesions and bring the appendix into the wound for its removal. The appendix could be felt buried beneath a dense pericolic (Jackson's) membrane. This membrane had to be divided before the appendix could be exposed. It was situated posterior, its tip pointing north. Seeing that it would be unsafe to break up or sever the surrounding adhesions sufficiently to deliver the appendix into the wound for its removal, I enlarged the incision sufficiently to allow working room, retracted with deep retractors, and with much difficulty removed the appendix in situ. Its proximinal half was normal in appearance; the distal half was gangrenous,

5. Rhamy, B. W.: Acetonuria and the Relation of Acetone to "Acid Intoxication," THE JOURNAL A. M. A., March 2, 1912, p. 628.
6. Ehrmann: Berl. klin. Wchnschr., August, 1913.
7. Morris: Clinical Laboratory Methods, p. 67. Briefly, the test is as follows: Ten c.c. of urine are evaporated to one third of its volume. To the residue are added a few drops of hydrochloric acid. It is then made to a paste with plaster of Paris, allowed to stand until it begins to set and extracted twice with ether after breaking into fine fragments. The ethereal extract is evaporated, and the residue dissolved in water, and neutralized with barium carbonate. Two or three drops of hydrogen peroxid are then added, which converts the oxybutyric acid if present into diacetic acid, which is then determined by the ferric chlorid or Gerhardt test.

nigh onto rupture. At the point of juncture of the two portions the appendix was constricted as if by a tight ligature, which constriction was caused by the band of pericolic membrane which surrounded the cecum and buried the appendix beneath it.

The usual peritoneal toilet was carried out, a split rubber drainage tube inserted well down over the lower cecum, and the abdomen closed. The patient was put to bed in the Fowler position, and the Murphy drip ordered, together with morphin, one-fourth grain, and atropin, 1/150 grain by the needle.

The patient reacted well from the anesthetic and operation with apparently little shock, and had a good night. The next morning the pulse was 118, temperature 99, and conditions looked encouraging.

Peritonitis.—The next evening, thirty hours after the operation, the patient began to show signs of a rapidly spreading general peritonitis: chills, a temperature of 104.5, a pulse of 140, vomiting, the abdomen much distended and rigid, the countenance pinched. The clinical picture indicated that the inevitable would result unless we could do something more, and that very soon. The patient was accordingly returned to the operating room, and hypodermoclysis of 1 quart saline, began simultaneously with the anesthetic. His condition was desperate, and it seemed probable that he would die on the operating table unless we got him off soon. I reopened the abdomen through the original incision. The peritoneal cavity was filled with bloody pus. This fluid was hurriedly mopped out with dry sponges, and six split rubber drainage tubes inserted as follows: one down to the stump of the appendix; one below the cecum; one extending above along the ascending colon toward the liver, these three coming out through the original incision; another through a stab wound in the left flank extending downward toward the sigmoid and behind the bladder; another through a stab wound to the left and a little above the umbilicus, extending upward in the region of the stomach and spleen, and a sixth one through a stab wound in the right loin posteriorly, draining the region of the cecum and ascending colon from behind.

From this day on we had a stormy time; the temperature did not fall below 102 for eight days. Paralytic distention was met with pituitary extract, repeated at six-hour intervals, usually with relief. The bowels moved on the second day. During the subsequent four days the patient received by hypodermoclysis a total of 4 quarts of normal saline solution and 1 quart of glucose solution. On the fifth day he became profoundly jaundiced, the urine containing much bile, 5 per cent. albumin and many casts (a toxic nephritis).

Retrocecal Abscess.—March 25, the patient's condition again looked promising. The jaundice cleared up and the outlook seemed a little hopeful, when his temperature suddenly began to rise again and he was seized with severe pain in the lower right flank. I felt certain that we had an abscess below the cecum which was not within the range of our drainage. His condition did not permit of a general anesthetic. Under local anesthesia of quinin and urea hydrochlorid I cautiously dissected through a 1-inch incision in the extreme lower right abdominal quadrant, until the peritoneum was reached. This was opened and an abscess cavity found, which on digital exploration extended upward and posteriorly. A split rubber drain was inserted, this making the seventh drain into the peritoneal cavity. The patient's condition was critical for the next four days, when it began to clear up and we believed once more that we were about to enter on convalescence. At this juncture an acute gastric dilatation came very near closing the scene. This was met by the stomach tube, but recurred at intervals for the next three days.

Pleural Involvement.—March 29, he was seized with severe pain in the right chest; the temperature rose to 102.5. Examination revealed pleuritic friction sounds and a right sided pleurisy extending well down to the diaphragm. The liver was enlarged and very tender on percussion and palpation. The pleural cavity rapidly filled with fluid, which was aspirated, 24 ounces of bloody seropus being removed.

Liver Infection and Empyema.—Exploratory aspiration of the liver was done, the withdrawn fluid showing microscopically numerous pus cells. On the following day, April 2, the ninth rib was resected in the midaxillary line. This was done under local anesthesia, supplemented by a small amount of chloroform. The patient's condition was critical from sepsis and exhaustion, and at one time the head nurse thought he had died on the table. The chest was opened and several ounces of pus evacuated from the pleural cavity. The liver could be clearly seen covered by the pleura and diaphragm. On digital exploration, fluctuation was detected, and as the liver seemed to be adherent to the diaphragm, I did not hesitate to incise the abscess, and I introduced a wick of iodoform gauze which was brought out through the opening in the resected rib. Another gauze drain was inserted into the pleural cavity, extending upward, and also brought out through the resected rib opening.

The liver did not drain very much for the first few days; but subsequently free drainage was established, when the gauze drain was removed and not replaced. The drain in the pleura was renewed several times, and removed at the end of two weeks.

Outcome.—The patient suffered much from adhesions, causing distention and pain, for several weeks. His recovery was slow and tedious, but he was able to leave the hospital June 3, 1915, with a fecal fistula communicating with the cecum, and an empyema sinus still discharging. A letter from him dated Aug. 10, 1915, says that both have closed and that he is in good health and ready for work.

SUMMARY

The gangrenous appendix in this case was clearly due to constriction by a Jackson's membrane.

The technical difficulties encountered in its removal were due to its posterior situation and to its being buried beneath a pericolic membrane, plus an adherent cecum.

The early drainage of the peritoneal cavity, which was done thirty hours after the primary operation when the abdomen was reopened on the advent of the general peritonitis, was probably responsible for the favorable outcome.

There was retrocecal abscess which was located and evacuated under local anesthesia.

This was followed by pleural involvement, the infection of the liver, and the prompt and radical treatment of the empyema and drainage of the abscessed liver through the transpleural-thoracic route.

In discussing this method of attacking an abscessed liver in such cases, Deaver[1] says that this is the route of choice even in cases in which there is no empyema. He describes in detail the technic of drainage through the thorax transpleurally, and adds that only about 16 per cent. of liver abscesses can be successfully handled through a laparotomy.

This case shows what can be accomplished by persistent and well directed effort, even in the face of such desperate crises as were encountered, and also emphasizes the necessity for operation in all cases of appendicitis as soon as recognized.

1. Deaver, J. B.: Appendicitis, Ed. 3, Philadelphia, P. Blakiston Son & Co., 1905, p. 422.

Production of Sodium and Sodium Peroxid.—According to *Commerce Reports*, the production of sodium and sodium peroxid is being rapidly increased in the United States where there is an enormous demand for the peroxid and cyanid, the former being chiefly used in bleaching operations and the latter for metallurgy. They are made from metallic sodium which is obtained from caustic soda and from Chile saltpeter or sodium nitrate, the by-product in the latter process being nitric acid, by the electric process.

INTRASPINAL INJECTIONS OF MERCURIALIZED SERUM IN A CASE OF SPASTIC PARAPLEGIA

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Our knowledge as to the cause and treatment of many types of disease of the nervous system is very limited. Practically nothing definite about their etiology is known, and no successful method of treating them has been suggested or developed up to the present.

The treatment of syphilitic disease of the central nervous system by subdural injections of therapeutic material has been established on a rational and safe basis by the work of Swift and Ellis.[1] The introduction by Byrnes[2] of a nontoxic preparation of mercury in the form of mercurialized serum for intraspinal use has added another efficacious remedy for the treatment of cerebrospinal syphilis.

In view of the successful results following subdural therapy for neurosyphilis the possibility of intraspinal injections in some types of nonsyphilitic disease of the nervous system naturally suggested itself. In this connection the report of the following case may be of interest and perhaps of some value:

REPORT OF CASE

History.—Mr. W. T., farmer, aged 28, of the central part of the state, complained of trouble with his digestion, of soreness over his stomach, and that his walk was very bad. The family history was negative. About six years previous to the time he came under observation he had had typhoid fever, the course of which was not especially severe. He denied venereal infection. His habits were good.

The present illness began insidiously about four years previously. The first thing he noticed was that his body would get warm and that his legs would tend to get stiff. One day while at work he felt his whole body become "feverish," and after that both his legs seemed to become quite stiff. The stiffness promptly disappeared, but he found that he could not run as well as he usually could. From that time on his walk got slowly but steadily worse. Early in the course of the trouble he noticed a "numbness" in the right leg, and some time later numbness in the other leg. He got worse after exertion and seemed to feel better after rest. His general condition also had become steadily worse. Constipation began with the onset of his trouble. He had been unable to work for nearly three years and said he had lost about 25 pounds in weight in the previous year. He had spent much time in one of our leading sanatoriums. Later he was seen by a well-known neurologist who recognized the disease and emphasized its hopelessness.

Examination.—The patient walked with a typical spastic gait—not ataxic—using two canes. The superficial reflexes were increased, and the knee jerks were greatly exaggerated. Definite ankle clonus and dorsal flexion of the great toe were obtained easily on both sides. No real patellar clonus could be elicited. Physical examination otherwise was entirely negative. There were no sensory and no sphincter disturbances. There was no atrophy. The urine was normal. The blood was normal, the Wassermann test negative. Lumbar puncture yielded 10 c.c. of clear, colorless fluid under increased pressure. The fluid contained globulin +, cells thirty, and gave a negative Wassermann.

Diagnosis.—Spastic paraplegia (lateral sclerosis).

Treatment.—The patient was told in unmistakable language that there was no drug or treatment that was known to have a curative effect in this disease and that since there was nothing else to be done perhaps intraspinal treatment might be tried. This treatment was merely suggested, not urged. He was allowed to decide for himself. After a delay of a month he decided to take the chance. Within the next seven months (April 9 to November 13) he received one injection of neosalvarsanized serum and nine of mercurialized serum intradurally. The former was given for the purpose of noting his reaction to intraspinal injection, for I had not yet had any personal experience with the procedure in nonsyphilitic disease. The mercurialized serum was supplied through the courtesy of Dr. Charles M. Byrnes, the originator of this serum. It was administered by means of a syringe after the simplified method suggested by Warfield.[3] The reactions were all rather mild in this case and were more marked at the beginning than at the end of the course of treatment.

Clinical Result.—There was soon noticed a slow but steady improvement in the gait. It is still spastic, of course, and no doubt always will be, but the change in the character of the patient's walk has been quite striking indeed. All of his other symptoms have disappeared. The superficial reflexes, knee reflexes, ankle clonus and Babinski are all practically unchanged up to the present, and since they are dependent on irreparable degenerative changes that have already taken place, no change in them is to be expected. The spinal fluid which at first contained globulin + and thirty cells, and was under increased pressure, now comes out under normal pressure and shows no increase in its globulin content and only two cells. Definite symptomatic improvement coincident with a return of the spinal fluid to normal thus constitutes the extent of the clinical change up to the present.

REMARKS

In view of the recent studies on the cerebrospinal fluid, especially in its relation to neurosyphilis, intradural therapy in an obscure type of organic nervous disease would seem to be indicated. Possibly some of these obscure diseases may be manifestations of an infectious process of some sort, the nature of which is not known. No matter what the etiology may be, the most effective way to reach the seat of the pathologic process is by direct subdural injection of the therapeutic substance. In the absence of exact knowledge on the cause and nature of these diseases, no curative drugs are known at present. Under the circumstances Byrnes' mercurialized serum suggests itself as a drug that might be tried. The result apparently obtained in this case suggests the possible value of this serum. Such a result may have been merely a coincidence. Probably not every case will improve under this form of treatment. Neither does every case of cerebrospinal syphilis improve under intraspinal therapy. Each case may be judged on its own merits, and if in any case of chronic disease of this kind some real improvement can be brought about by intraspinal injections, this method of treatment seems to be justified.

1. Swift and Ellis: The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., September, 1913, p. 331.

2. Byrnes, C. M.: The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2182.

3. Warfield, L. M.: A Simplified Method for the Intrameningeal Injection of Neosalvarsan in Syphilis of the Nervous System, THE JOURNAL A. M. A., Dec. 26, 1914, p. 2287.

The Harrison Narcotic Law.—The United States District Court for the Western District of Washington has decided that Section 8 of the Harrison Narcotic Law, providing that the possession or control of the habit-forming drugs named in the act by a person who is not registered and who has not paid the special tax is unlawful, is constitutional and that such possession or control is made presumptive evidence of a violation of the act. Congress had the right to make it unlawful to have in his possession or control the unlawful article by any person who has not registered or paid the special tax.

Therapeutics

ACIDOSIS IN CHILDREN

The part which this condition plays in the terminal symptoms of acute and chronic disease is not sufficiently recognized. It has long been known that acidosis is a termination in diabetes mellitus, but that this serious condition may occur in any acute disease when there is prolonged vomiting, starvation, or even when the food is for a long time starch-free, is not always known or often guarded against. The vomiting after anesthesia, and the long continued administration of albumin water or other pure protein food after operation predisposes to acidosis, and collapse, shock and gastric disturbance are often due to this factor. To guard against the acidosis related to continued vomiting after a surgical operation, starch should be given in any pleasant assimilable form in large quantities, when possible, for two or three days before the operation. Also, there should not be a too long starvation period before an operation is done. Much prostration will be prevented by such care. Egg albumin water is not a good food, and as soon as possible some starch food should be given after the operation. In typhoid fever, in pneumonia, in septicemia and in all prolonged illnesses starch should constitute part of the food. A too long starch-free diet predisposes to this type of acidosis, and in serious illness the necessity for the feeding of some starch and some sugar is often forgotten. In the pernicious vomiting of pregnancy and in other forms of starvation it has been shown that acidosis will develop, and that the ammonia nitrogen increase in the body, which occurs in these conditions, is a source of danger.

The treatment of acidosis, or its prophylaxis is the administration of alkalies, principally sodium bicarbonate. Alcohol also aids in preventing acidosis.

While adults are not exempt from gastro-intestinal disturbances that may cause a condition of acidosis, children often suffer from the condition, and it may even occur in epidemic form among young children.

Metcalf[1] studied 100 cases of acidosis in young children that occurred as an epidemic in Concord, N. H. His description of this condition is so well presented that a review of it will aid in making the diagnosis and instituting the proper treatment. The age of the child attacked in this epidemic varied from 1 to 13 years, 80 per cent. of the cases occurring in children between 2 and 8 years of age. No single food or indiscretion in diet was the cause. If milk or water caused the disease, it was not proved. Neither starvation nor excessive fat intake were causes of any constancy. Seventy per cent. of the children had some nose, throat or lung infection either preceding or complicating the acidosis; eighty-four had never suffered from anything similar to this acidosis attack.

In eighty-six cases the onset was sudden, and generally the disease began with vomiting. The most prominent symptoms were coated tongue, drowsiness, thirst, flushed face, prostration, diarrhea (about one third of the cases) and cerebral symptoms. The fever varied from a little above normal to 104, while in some of the most serious cases there was a low temperature. The pulse was always rapid, and followed the temperature, the higher the temperature, the higher the pulse rate. With the prostration there was frequently a paleness about the mouth, quite noticeable. There is often dyspnea, and acidosis in any condition is a common cause of dyspnea. The urine was scanty in 50 per cent. of the cases and generally clear, though other observers have found it frequently cloudy. Acetone was present in every case, even within a few hours after the onset of the sickness, and always persisted until after the urine became alkaline under the treatment. Of forty-five cases examined, diacetic acid was present in fifteen. It is a danger signal, and if the patient recovered, it disappeared from the urine before the acetone disappeared.

Recovery under proper treatment may be rapid especially in mild cases. The average duration of fatal cases was thirty-two hours; nine patients died. No specific germ was found in any of the cases examined.

TREATMENT

The treatment, from start to finish, consists of the administration of alkalies, either sodium bicarbonate or potassium or sodium citrate. Most children can take and retain large doses of these drugs. A few did not retain the alkali when given by the mouth. In these cases the alkali was given by the rectum. The doses must be large to combat the acidosis quickly. The quicker the urine is rendered alkaline the better for the child. Four grams (60 grains) of sodium bicarbonate every two hours is about the amount desired, according to Metcalf. Smaller amounts act much more slowly. Full doses will alkalinize the urine in from twenty-four to thirty-six hours. The more serious the symptoms, the more necessary it is to push the alkali. Sodium bicarbonate may be given as follows:

	gm. or c.c.	
℞ Sodii bicarbonatis.....	20	ʒ ivss
Aquae	200	fl ʒ vi

M. Sig.: Two teaspoonfuls in an equal amount of water every thirty minutes.

This dose is for any age, and is to be continued until the urine is alkaline, or at least until eight doses have been taken. The frequency may then be reduced to once in two hours, and then the dose may be given more or less frequently, depending on whether or not the urine is alkaline. If the intoxication is serious, the dose should be given every fifteen or twenty minutes.

If the medicine is not retained, peppermint water or wintergreen water may aid in its retention; or it may be given by rectum, 2 grams (30 grains) in 2 ounces of water, every hour. Or potassium or sodium citrate may be substituted:

	gm. or c.c.	
℞ Potassii citratis.....	40	ʒ ix
Aquae gaultheriae.....	200	fl ʒ vi

M. Sig.: Two teaspoonfuls, in an equal amount of water, every thirty minutes.

This dose is for any age, and should be continued, increased or diminished in frequency as described for sodium bicarbonate, depending on the condition. Whatever the alkali used, it should be continued for several days in diminishing frequency of dosage even after the acute symptoms have subsided.

It may be noted that if the urine is made long alkaline, ammonium compounds may appear in the urine, and in infants who wear diapers this ammonia may combine with any alkali present in the diaper, such as "soap, lye, lime or stool,"[2] and cause severe irritation of the buttocks. Hence in these cases the diapers must be thoroughly cleansed of all soap.

1. Metcalf, C. R.: Acidosis with Autointoxication in Infants and Children, Am. Jour. Dis. Child., January, 1915, p. 28.

2. Zahorsky, John: The Ammoniacal Diaper in Infants and Young Children, Am. Jour. Dis. Child., December, 1915, p. 436.

The best diet as soon as vomiting has ceased is probably barley water, oatmeal water, rice water, and soon afterward cereal gruels.

Thirty-five of the hundred patients had diarrhea. Metcalf does not suggest a cathartic, either for the constipated cases or for those with diarrhea, but the large amount of alkali may cause catharsis. For some time the diet should probably be low on fats, although Metcalf did not find that excessive feeding of fat was a cause of the acidosis in his cases.

He occasionally used morphin when there was great "excitement." It would seem that small doses of chloral would be better, unless it were advisable to give the morphin hypodermically.

In very serious cases, not improving under the alkaline treatment pushed by the mouth or rectum, it would seem good treatment to give intravenously Ringer's solution, the amount depending on the age of the child. Ringer's solution is as follows:

		Gm. or c.c.	
℞	Sodii chloridi	9	gr. cxxxv
	Calcii chloridi	24	gr. iv
	Potassii chloridi	42	gr. viss
	Sodii bicarbonatis	20	gr. iii

M. et fac chartulam 1.

Sig.: To be added to a quart (1,000 c.c.) of distilled, or at least boiled, water.

This may be made into sterilized tablets and kept ready for use.

SUMMARY

1. It seems unprofitable to discuss theories of the cause of this acute acidosis until more scientific data have been developed. Suffice it to say that an overworked or disturbed liver seems to be unable to care for the fat offered it, and acetone products and resulting acidosis are the consequence. Whether a toxin is formed in the intestine or is absorbed from some distant infection, or from an infection of the nose, throat or lungs (as apparently so prominent in Metcalf's cases) which interferes with the liver activity, is not known. Many conditions might furnish such a toxin. There is probably always severe liver disturbance in the acidosis of diabetes mellitus.

2. Acetone bodies are neutralized by the sodium, potassium or calcium of the blood and tissues. Hence the great loss of these alkaline elements if the acidosis persists, and the need for large amounts of alkaline salts to save the patient.

3. The fact that such epidemics of acidosis can occur presupposes that isolated cases may occur, as in any other condition.

4. If a child suddenly is taken seriously ill with symptoms similar to those described above acidosis should be considered, as well as a beginning meningitis; hence the urine must be obtained and examined for diacetic acid and acetone. A modified alkaline treatment can do no harm to any other condition, and should be started before ascertaining the presence or absence of acetone bodies. If acetone is absent and there are cerebral symptoms, spinal puncture for diagnosis is indicated. With acetone absent and with diarrhea, a careful examination of the feces for pathologic germs and to ascertain the character of the digestion should be made. Also, a blood count should be taken, and the Widal test made. Such immediate examinations will save many lives.

INFANTILE DIARRHEA

It should be noted that many of Metcalf's patients had diarrhea as a symptom, and in this connection the findings of Day and Gerstley[3] are of interest. They carefully studied twenty-two cases of diarrhea in infants, and found that eighteen of these were not due directly to maldigestion or to any pathologic intestinal germ, but were due to some infection of some other part of the body.

Only two of these cases were due to food disturbance, associated with increased temperature, greenish, watery stools, and with no abnormal germs in the feces, and no remote source of infection. These patients rapidly recovered with a diet of tea for the first twenty-four hours, and, later, breast milk.

Two patients showed the gas bacillus in the feces. In these cases withdrawal of food did not stop the fever or the symptoms, but the patients recovered under albumin milk. Buttermilk is also at times a cure for the gas bacillus diarrhea.

As just stated, the other eighteen patients of this series had some distant infection, with diarrhea as a secondary symptom.

These observers urge that if an infant with diarrhea does not rapidly improve after twenty-four hours of starvation, with a diet of water or tea, the feces should be examined for abnormal bacteria and the urine for acetone, and every possible source of infection in any other part of the body should be investigated. The treatment, if pathologic bacteria are found in the feces, depends on the germ present. If acetone is found in the urine, the treatment is as presented above, alkalies in large doses. Any localized infection should, of course, be properly treated.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ERGOTININE CITRATE-ROCHE.—A non-proprietary brand complying with the standards for ergotinine citrate (see N. N. R., 1915, p. 115).

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York).

HOMATROPINE HYDROCHLORIDE-ROCHE.—A non-proprietary brand complying with the standards for homatropine hydrochloride (see N. N. R., 1915, p. 57).

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York).

SEIDEN PEPTONE-ROCHE (Silk Peptone).—A non-proprietary brand complying with the standards for silk peptone (see N. N. R., 1915, p. 335).

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York).

THEOBROMINE AND SODIUM ACETATE-ROCHE.—A non-proprietary brand complying with the standards for theobromine sodium acetate (see N. N. R., 1915, p. 371).

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (The Hoffmann-LaRoche Chemical Works, New York).

3. Day, A. A., and Gerstley, J. R.: A Study of Certain Cases of Infantile Diarrhea During the Summer of 1914, Am. Jour. Dis. Child., March, 1915, p. 233.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, JANUARY 29, 1916

A FALLACY REGARDING THE INTERRELATION OF THE SUPRARENALS AND THE PANCREAS

In a prefatory note to the new journal *Fermentforschung,* the editor, Professor Abderhalden of Halle, remarks that hypotheses will be welcomed in its columns because they are so often the inspiration to progress and the incentive for fruitful investigation. While this is doubtless true in no small measure, every critical student of scientific medicine realizes how much easier it is to get wrong views and mistaken conclusions into print than it is to eliminate them later. From decade to decade the uncritical makers of books hand down the follies of past assumptions, and a fabric of untenable conceptions becomes perpetuated until the impression finally prevails that these represent the truths rather than the fictions of science. Elliott justly warned against building on insecure foundations when he said, "Medicine owes no debt of gratitude to those who teach her theories without proof." [1]

Many statements have been made concerning mutual relations said to exist between the organs of internal secretion. Such statements are usually based on extremely slender evidence. It is doubtless true that certain common bonds exist between such glands as the suprarenals, thyroids, pituitary bodies, etc. Suppression of one often leads to enlargement of another; and the clinical indications of possible interdependence are manifold, though they are usually rather vague and complicated. If undue enthusiasm in the field of the physiology and pathology of internal secretions and the functions of the endocrine glands has led to extravagant statements or unfounded conclusions, it becomes a scientific duty to unravel the difficulties or disclose the errors that have been perpetuated.

A task of this sort has recently been undertaken at the Mayo clinic by Mann and Drips.[2] Numerous experiments have been reported, the results of which tend to suggest the existence of a specific functional relationship between the suprarenals and the pancreas. Thus the suprarenal secretion is believed to mobilize carbohydrates, whereas the pancreas facilitates their utilization. In a sense these two functions either antagonize or supplement each other. It has been maintained, on the one hand, that the injection of epinephrin decreases or inhibits the flow of pancreatic juice and that the removal of the suprarenals increases the pancreatic secretion. On the other hand, this inhibitory effect has been demonstrated to be due to the vasoconstriction produced by epinephrin rather than to any specific effect on the pancreatic gland. Mann and Drips have furnished an illustration of the ease with which mistaken conclusions may be drawn in these matters. They note that the pancreas develops a characteristic pink color and its blood vessels are injected to a maximum degree after double suprarenalectomy. This hyperemic condition of the pancreas does not take place, however, until there is evidence that arterial tone is decreasing in the other organs. The increased flow of pancreatic juice after removal of the suprarenals — a point which has been brought forward as evidence of the normal inhibitory influence of the suprarenals on the pancreatic function — is little greater than that which occurs in normal animals under the same conditions as regards blood pressure, etc., and it does not exceed the increase incident to the trauma from the removal of only a single suprarenal. The flow, furthermore, is insignificant in comparison with the actual secretion during the process of digestion. Again, there is a marked decrease in the zymogen content of the pancreas in suprarenalectomized animals, but this is merely proportionate to the time of low blood pressure.

All the changes emphasized are incident to the moribund condition of suprarenalectomized animals. They do not demonstrate any specific relationship whatever between the suprarenals and the pancreas; for, as Mann and Drips correctly conclude, all the changes found in the pancreas grossly, histologically and functionally, after removal of the suprarenals can be accounted for by the changes in general taking place in the organism as a whole, due to decreased blood pressure, decreased temperature, and the other changes incident to the exhibition of a moribund condition.

1. Elliott, T. R.: Ductless Glands and the Nervous System, Brain, 1913, xxxv, 320.
2. Mann, F. C., and Drips, Della: The Relation of the Adrenals to the Pancreas, Arch. Int. Med., 1915, xvi, 681.

THE DANGERS OF RUBBER MANUFACTURE

The rubber industry in the United States is important, employing tens of thousands of men and women, and increasing continually. Whether or not it is attended with risk to the health of those engaged in it, and is to be classed as a dangerous trade, most of us would be unable to say. In Germany and France it is considered a decidedly dangerous trade, and many cases of poisoning from carbon disulphid used in vulcanizing rubber are recorded in the literature of those countries. In one rubber manufacturing city, Leipzig, Lauden-

heimer[1] found fifty cases of carbon disulphid insanity in Flechsig's clinic, and this substance is still largely used in German rubber works. In a recent French publication[2] are described eight cases of mental breakdown among thirty men who were using carbon disulphid in pasting rubber strips on belting. In the British reports of earlier years, this poison and naphtha (used in making rubber cloth with a paste of rubber and naphtha) were said to be the cause of much ill health and serious nervous troubles among girls especially, and though the use of carbon disulphid has been largely given up now, the fumes of naphtha are still a troublesome feature in British rubber works. Another volatile poison frequently mentioned in continental reports is benzene (benzol, C_6H_6), more poisonous than benzin and naphtha, and cheaper than the latter over there.

A bulletin dealing with the use of poisonous substances in the rubber industry in this country has just been issued by the federal Bureau of Labor Statistics[3] as part of a series on industrial accidents and hygiene. The basis of this report is an investigation of rubber factories in different parts of the country manufacturing all varieties of goods. It is surprising to learn that so many poisonous substances are used in this industry. The list includes lead compounds, such as litharge, the basic sulphate of lead, the basic carbonate of lead, and red lead; anilin oil; sulphids of antimony; petroleum products; coal-tar benzene; carbon disulphid, and carbon tetrachlorid. In addition to these compounds, concerning which definite information could be obtained, Dr. Alice Hamilton, who prepared the report, learned of the use in reclaiming rubber, of various phenols of different degrees of crudity, and also of pine oil, turpentine, tar, and a product of the action of carbon disulphid on anilin known as thiocarbanilid. The rubber industry has many trade secrets, and information about all the compounds in use, especially in rubber reclaiming, was difficult to secure.

In spite of this array of poisons, the report does not characterize the rubber industry in this country as an inherently dangerous trade. What danger there is, and it is evident that most factories are far from safe in certain departments, comes from carelessness in the handling of poisons so that preventable dusts and fumes are allowed to escape. This was found to be true in almost all the factories inspected, even the best. That such accidents are not more generally known is explained by the fact that out of the whole force in a plant only a small proportion engage in work exposing them to poisoning, so that even if the sickness rate among them is high, it makes little impression.

In comparing American methods of manufacture with the European, the advantages are seen to be on the American side. We do not use carbon disulphid in vulcanizing to any great extent. Dr. Hamilton states that she found only 130 men using this substance in all the factories visited, and she contrasts this with a statement of the German factory inspectors' report for 1910 concerning a single factory in which the installation of a certain machine had replaced the work of 150 women vulcanizers. No women do this sort of work in America. Another reason for the comparative safety of rubber work in America is that most of our rubber cloth is made on calenders, by pressing thin sheets of rubber into the fabric, and then vulcanizing by heat. In England and on the continent the usual method is by "spreading," that is, pressing a paste of rubber and naphtha or benzene into the fabric and then letting the volatile part evaporate, and finally vulcanizing by means of carbon disulphid. This method is used also in America, but only exceptionally, as benzene is too expensive to be used in large quantities.

These advantages are great, yet according to the report they are not sufficient to make the industry altogether free from danger, in the absence of proper precautions. Consequently lead poisoning is not uncommon among the men employed in compounding rubber and mixing it on the mills. Acute, severe benzin or naphtha poisoning is said to be rare, but mild chronic poisoning is probably very common among the men and women who apply rubber cement. The toxicity of antimony pentasulphid was so much in doubt, being practically ignored by the toxicologists, that the bureau asked Prof. A. J. Carlson to determine whether or not there was any danger in the use of this compound. Carlson's report is found in the appendix to the bulletin. He tested the golden and the crimson sulphids with human gastric juice, and found that about 3 per cent. of the former and 8 per cent. of the latter passed into solution, showing that there is a possibility of poisoning in the case of workmen exposed to large quantities of the dust, as is true in rubber compounding.

Carbon disulphid is said to be unknown as an industrial poison to physicians in this country, even to those in rubber towns; yet the investigators were able to discover cases of carbon disulphid psychosis and paralysis among the vulcanizers of dipped goods and the splicers of inner tubes for tires. Dr. Hamilton suggests that other cases would perhaps come to light if the industrial history of the inmates of certain Ohio insane asylums were studied as Laudenheimer studied those in Leipzig.

Carbon tetrachlorid is a new substance in the rubber industry, introduced because of its noninflammable character to take the place of the highly inflammable carbon disulphid as a vehicle for sulphur monochlorid in vulcanizing thin or highly colored goods, or in splicing inner tubes. Waller[4] in England and Leh-

1. Laudenheimer: Die Schwefelkohlenstoffvergiftung in Gummiarbeiter, Leipzig, 1899.
2. Briau: Lyon méd., 1912, cxix, 897.
3. Hamilton, Alice: Bull. 179, U. S. Bureau of Labor Statistics.
4. Waller and Veley: Lancet, London, 1909, ii, 369, 1162, 1307.

mann[5] in Germany have shown that it is decidedly toxic; according to the former twice as toxic as chloroform, according to the latter rather less so than chloroform.[6] It is less dangerous, however, than the disulphid.

Anilin oil, also unfamiliar as an industrial poison in America, is shown to be fairly common, especially in tire works and in the reclaiming of rubber, and it is said that the exposure to anilin fumes is increasing since we have had to begin to manufacture our own anilin, the German supply having been cut off. This is an insidious poison, for the odor is pleasant and the fumes do not give warning of their harmfulness by irritating the eyes and throat, as do most volatile poisons. Cases of anilin poisoning are said to be well known in Akron, Ohio, and the victims are referred to as "blue boys," from the cyanosis which is the most striking symptom. The researches of Lehmann are quoted to show that very small quantities of anilin are needed to produce toxic symptoms, and a study of anilin poisoning in Akron plants by Rey V. Luce is appended to the bulletin.

The rubber industry is thus seen to be a fruitful field for the study of some of the rarer industrial poisons. Nor do the ones described here complete the list. New compounds are continually being introduced and experimented on, some of them substances about which very little is known. Medical research on the effects of these substances on the human organism should keep pace with the chemical research into their value as compounds or vulcanizers.

LOSSES OF AVAILABLE ENERGY IN THE FERMENTATION INDUSTRIES

Millions of calories of nutrients in the form of useful, digestible and nutritious cereals are annually subjected to the action of yeast in the production of fermented malt beverages and distilled liquors for human consumption. This process inevitably means the loss of a certain amount of energy, the expenditure of most of which is chargeable to the living account of the micro-organisms concerned in fermentation. It properly becomes a question of economy in these days of conservation of natural resources to inquire into the cost of the conversion of natural foodstuffs into alcohol and other by-products. It is desirable to know the extent of the losses encountered in this biologic transformation, quite aside from any consideration of ethics, of the alleged food value of alcohol, or the social and economic questions indirectly involved in the liquor traffic. Even if the production of alcoholic beverages is to be looked on from the purely objective standpoint of the preparation of a desirable or even necessary accessory to the dietary equipment of mankind, every nation is entitled to "count the cost."

At the Institute for the Fermentation Industries in Berlin, Völtz[1] has undertaken an investigation by which a balance can be struck between the raw materials employed in the breweries and distilleries and the returns in the form of various commercial products. Nowhere can this comparison be conducted more favorably than in Germany, where every item of by-product, such as distillers' and brewers' grains, waste yeast, spent hops, etc., is conserved and reconverted as far as possible into edible tissue through the medium of animal husbandry and agriculture. It should be remembered, at the outset, that the comparison takes no account of labor charges. We are concerned here solely with the conservation of energy from the standpoint of the food values involved.

One hundred kilograms of barley, which forms the cereal basis of the brewing industry, are calculated to furnish 286,100 calories of available, metabolizable energy. About 5 per cent. of this organic substance is lost in malting the grain. One hundred kilograms of malt yield 33 kilograms of dry undissolved residue (brewers' grains) as a by-product in the production of 530 liters (140 gallons) of beer with an alcohol content of 3.5 per cent. and a residue of dissolved substances equivalent to 5 per cent. To this must be added the waste residues of spent hops and yeast acquired in the course of fermentation. These by-products cannot, of course, be utilized with any advantage excepting as food for animals. Allowing to the alcohol produced its full value of about 7 calories per gram, without debating the question of whether it may truly be classed as a human food, the sum total of recoverable products, in terms of available calories, averages 87 per cent. Approximately 60 per cent. is recovered in the form of beer, the remainder in the so-called by-products. From the standpoint of food energy, therefore, about 15 per cent. of useful nutrients is lost.[2]

A similar calculation in the distillery industries in which potatoes along with small additions of malt are used as the available source of carbohydrate for the production of alcohol indicates somewhat smaller losses of available energy, not exceeding 7 per cent. Here again it is assumed that the alcohol created to the extent of two thirds of the energy furnished in the plant products is available at its theoretical calorific value.

In this country the duty of conserving the waste in these enormous industries is being recognized in

5. Lehmann, K. B.: Arch. f. Hyg., 1911, lxxiv, 1.

6. Dr. Hamilton suggests that possibly carbon tetrachlorid may be found to resemble chloroform in producing delayed symptoms of poisoning. A recent number of the Journal of Experimental Medicine contains an article by Evarts Graham on "Late Poisoning with Chloroform and Other Alkyl Halides," in which tetrachlormethane (carbon tetrachlorid) is shown to possess even more necrosis-producing power than chloroform. The most extensive necrosis was seen after about two days. The minimum fatal dose per kilogram rabbit is 0.085 gm. for chloroform and 0.053 gm. for tetrachlormethane.

1. Völtz, W.: Nährstoffbilanzen für Rohstoffe und ihre Erzeugnisse bei der alkoholischen Gärung, Biochem. Ztschr., 1915, lxix, 334.

2. Eltzbacher, P.: Die deutsche Volksernährung und der englische Aushungerungsplan, Braunschweig, 1914.

growing measure. Some of the by-products like yeast are still thrown aside as worthless refuse; but the modern efficiency movement will soon change this extravagant practice. After all, even though the mere energy losses directly involved in the fermentation process may not be enormous, the primary question of importance to mankind is not whether such losses of nutrient calories are great or small, but rather whether the alcoholic products produced represent a wholesome addition to our stock of food. The growing world-wide movement against alcohol is pointing to the answer. "The laboratory and the life insurance records simply give exact expression to what has long been a matter of common knowledge to the employer of labor and to leaders and commanders of men, to wit, that the influence of alcohol on any large group of men, whether they be artisans or soldiers, is harmful and lowers the efficiency of the group. Individual susceptibility varies, but the man who thinks he is an exception and can indulge with safety may find that he is mistaken only after serious damage to the body has been done and perhaps a definite loss sustained in happiness and achievement." [3]

THE PREVENTION OF CARDIAC DEFECTS

The importance of heart disease as a factor in economic waste is apparent to all those who think of the public health from the point of view of preventive medicine. Effective emphasis on this point has been made in two recent reports. Dublin[4] has pointed out, as a result of a study of the industrial population of Massachusetts, that the chief variation in mortality rates for 1914 between the industrial and general population is in pulmonary tuberculosis, which causes 13.4 per cent. of all deaths in the industrial group and only 9.6 per cent. of the deaths in the general population. He has shown, further, that organic diseases of the heart are the chief cause of death throughout Massachusetts, both in the industrial and in the general population. Approximately 15 per cent. of all deaths were from this cause, comparative figures being given for the four largest cities in the state. The rates of the different cities vary to a remarkable degree, the highest being in Worcester, where 21.5 per cent. of the total deaths among the industrial population and 15.2 per cent. of all deaths are caused by organic heart affections. The general death rate for Worcester was 13.1 per cent.

It is well known that similar conditions exist in practically all communities. In New York City, where the death rate from pulmonary tuberculosis has declined from 421 per hundred thousand in 1870 to 169 in 1914, the rate from heart disease has increased from 74 to 169 in the same period of time. If in New York at present the death rate from heart disease is the same as from tuberculosis, why is so much said and done about the prevention of the latter and so little about the former? The answer, no doubt, is partly to be found in the fact that heart disease is not ordinarily communicable or, in the same sense with tuberculosis, preventable. The economic waste from untreated cardiac patients, however, and those subjected to industrial maladjustment, is largely preventable.

An interesting experiment in work for patients with cardiac disease was initiated by Dr. H. W. Guile at Bellevue Hospital, New York, in 1911. It is essential, in work of this kind, to utilize to the utmost the mechanism for social and medical after-care of discharged cardiac patients. In addition, it is necessary to prevent their return to the hospital if possible, to prevent unnecessary suffering, and to restore the more hopeful ones to a measure of economic usefulness. Such was Dr. Guile's program in the Social Service Bureau of Bellevue and Allied Hospitals. An evening class for cardiac patients was opened, one of the social workers at Bellevue assisting and doing also part time follow-up work in the more urgent cases. A brief survey of this work has recently been published in the report of the Social Service Bureau for the year 1914. The idea and motive of the work are thus summarized in the report:

> The usual career of the cardiac is a downward one, through ignorance of necessary precautions and unsuitable occupation, to invalidism and dependency. *We pay* in hospital, charitable, institutional expense. *He pays* in suffering. Why should we pay for the support of misery when it would cost less to prevent it?

That it would "cost less to prevent it" is shown by various tables, one of which indicates that six patients, who had spent a total of 251 days in the hospital preceding the establishment of the class, did not spend a day in the hospital during the first year after the establishment of the cardiac class. This was a saving for these six cases of $439 spent in hospital care by the city. In the case of one person ("J. W.") there was a gain of over $600 in the three years of attendance at the class as compared with the three years previous. This gain was not due to increased wages, as his earning capacity remained the same, but to the prevention of wage losses resulting from periods of decompensation, prevented by medical supervision and a change to a suitable occupation. No doubt a similar gain could be made in the majority of cases, although medical supervision that ignores the requirements of industrial adjustment seems to be almost useless.

The Bellevue experiment has dealt only with comparatively advanced cardiac patients. More important is the recognition of all cases, even those with the slightest defect, at the earliest moment. It is therefore to be regretted that so little attention has been

3. Fisher, Irving, and Fisk, E. L.: How to Live, New York, 1915, p. 242.

4. Dublin, L. I.: Mortality of the Industrial Population in Massachusetts, Pub. Health Bull., Massachusetts State Department of Health, November, 1915.

given here and elsewhere in studying the etiologic factors in these cardiac cases, particularly with a view to ascertaining their preventability. Such a study must precede the most important work of education, and would probably result in more careful medical examinations for cardiac defects in schoolchildren, specialized schooling and vocational training for affected children, more emphasis on the control of infectious disease with serious cardiac sequelae, and widespread education regarding necessary precautions and suitable occupations for cardiac patients. The problem is really a twofold one: the prevention of economic loss as a result of cardiac defects, and the prevention of the cardiac defects. The work cited above is a valuable beginning on the former phase of the problem; it is to be hoped that the next few years will see included in our efforts for disease prevention a more conscious attempt to control through educational efforts the factors of infection and bad personal hygiene responsible for a large percentage of preventable cardiac defects, particularly among the school population.

THE PINEAL BODY

The current enthusiasm for the subject of the ductless glands, based on the highly interesting and valuable discoveries which have been related to them in the past two decades, has brought with it the necessity of careful critique. It is becoming evident that some of the hasty conclusions will need to be cast on the rubbish heap of unprofitable venture in physiologic fields. Any statement made today with respect to the better known ductless glands or the functions of their "internal secretions" is likely to be scrutinized with critical eyes and forced to meet the test of experimental or clinical demonstration as well as the logic of science. On the other hand, the striking facts that have already been brought to light in connection with a few anatomic structures, once either regarded as insignificant or neglected because of their inaccessibility for observation, have awakened new interest in other structures of this sort.

To this category belongs the pineal gland. It is interesting as a vestigial remnant of a primitive dorsal eye. In certain lizards this organ still presents traces of its original structure, and is found to conform to the invertebrate type of eye. It is doubtful whether at any time in the history of vertebrates the pineal eye has been functional. Cases have been recorded in which tumors of the pineal body have been associated with obesity, premature sexual development and early maturity. On this basis the assumption has been made, for example, that the pineal structure produces a secretion which inhibits the growth of the body and restrains mental and sexual development from exceeding the rate looked on as normal for the adolescent period. This view, based on the supposition that pineal lesions are destructive, is by no means compelling; for the retention of function in neoplasms in other glands is not infrequent. Tumors of the hypophysis may give rise to symptoms of hyperpituitarism (as seen in acromegaly) rather than to deficient function of the gland; and similarly it is conceivable that pineal tumors may lead, at some stage of their development, to an active stimulating influence rather than to a deficiency symptom. Most of the data on the relation of the pineal body to sexual, somatic or mental precocity have been based on clinical and pathologic reports. Better directive evidence is to be expected from experimental attempts to induce "hyperpinealism" by feeding pineal extract and to cause "apinealism" or "hypopinealism" by extirpation of the pineal.

The latest attempts to study the influence of pineal gland administration are those of McCord,[1] who has fed or injected small growing animals under a variety of conditions. His conclusions were that such administration of pineal substances led to a more rapid growth of body than normal, and determined an early sexual maturity. The excess in rate of growth was most pronounced (40.9 per cent. excess in eleven weeks) in young animals fed with pineal tissue obtained from young animals. No tendency to gigantism has followed pineal administration. After maximum size was attained, pineal administration appeared to be ineffective. Both males and females respond to the influence of pineal substances in rate of growth, but the response has been more definitely manifested in males.

The converse method of extirpation of the pineal body has been attempted by very few investigators, and has led to seemingly paradoxic results. Surgical interference with a structure so minute as is the pineal and situated almost exactly in the center of the brain between the anterior corpora quadrigemina offers extreme technical difficulties. The gland is not easy to recognize when it is exposed amid hemorrhage; it is thus likely to be imperfectly removed, or other portions of the central nervous system may be injured as an incident of the operation. At the department of surgery in the Johns Hopkins University, Dandy[2] has succeeded in perfecting a suitable method of pinealectomy which enabled him to study the various phenomena alleged to be associated with pineal function. It is unnecessary to review the numerous details of what was observed in the development of the puppies operated on and their subsequent history. The uniformly negative outcome of these very careful surgical studies may best be summarized in the investigator's

1. McCord, C. P.: The Pineal Gland in Relation to Somatic, Sexual and Mental Development, THE JOURNAL A. M. A., July 18, 1914, p. 232; Second Paper, Aug. 7, 1915, p. 517. Berkeley, W. N.; Dana, C. L.; Goddard, H. H., and Cornell, W. S.: The Functions of the Pineal Gland with Report of Feeding Experiments, Med. Rec., New York, 1913, lxxxiii, 835. Dana, C. L., and Berkeley, W. N.: The Functions of the Pineal Gland, Month. Cycl. Pract. Med., 1914, xxviii, 78.

2. Dandy, W. E.: Extirpation of the Pineal Body, Jour. Exper. Med., 1915, xxii, 237.

own words. Following the removal of the pineal body no sexual precocity or indolence, no adiposity or emaciation, no somatic or mental precocity or retardation has been observed. The extirpation experiments seemed to yield nothing to sustain the view that the pineal gland has an active endocrin function of importance either in very young or in adult dogs. It is apparently not essential to life and seems to have no influence on the animal's well being. The incongruity of these results with the reported somewhat conflicting feeding experiments remains to be cleared up. In any event, the pineal body is not indispensable, as is its neighbor, the pituitary gland.

Current Comment

THE POSSIBLE RÔLE OF CHOLIN IN THE ORGANISM

Cholin, an organic compound long familiar to students of physiologic chemistry as a product of the disintegration of lecithins, has lately attracted renewed attention because of its possible physiologic functions. It can easily be produced from a variety of tissues in the body, and is present in considerable amounts in some organs, such as the suprarenals. In addition to this actual widespread occurrence of the organic base, and the existence of large sources from which it could readily be derived in the organism, is the fact of a pronounced reactivity of cholin toward some of the physiologic processes. Even in small quantities it exerts a prompt effect on the blood pressure, and some of the comparatively simple compounds of cholin, such as might conceivably be formed easily in the body, are of even greater potency. Hunt and Taveau[1] have found, for example, that acetyl cholin in doses of less than 0.00000001 gram per kilogram of body weight may cause a distinct fall of blood pressure, thus placing this substance in the category of the most active pharmacologic agents at present accurately known. In view of these facts, it is not surprising that the always available cholin or its derivatives have been charged with participation in some of the physiologic functions, and that pathologic consequences have been attributed to the abnormal circulation of cholin. To some degree the effects produced by cholin are antagonistic to those exhibited by the familiar epinephrin. Accordingly, as Hunt[2] has recently expressed it, the suggestion has frequently been made of late that certain symptoms classed as "vagotonic" (miosis, salivation, bradycardia, pylorospasm, etc.) may be due to the presence of abnormal amounts of cholin. It has also been suggested that cholin or some derivative of it may be a factor in certain physiologic processes; that, for example, such compounds may function as hormones for the parasympathetic nervous system in the same way in which epinephrin is believed to function as a hormone for the sympathetic nervous system.

1. Hunt, R., and Taveau, R. de: Jour. Pharmacol. and Exper. Therap., 1909, i, 303; Hyg. Lab. Bull. 73, U. S. P. H. S., 1911.
2. Hunt, Reid: A Physiologic Test for Cholin and Some of Its Applications, Jour. Pharmacol. and Exper. Therap., 1915, vii, 301.

The comparatively easy conversion of cholin into the acetyl derivative whereby its physiologic activity may be increased many thousand times has afforded a very delicate physiologic test for the substance. The effect of acetyl cholin on the heart or blood pressure is easily measured by the usual methods of the physiologic laboratory. By Hunt's method, 0.00001 mg. and probably less of cholin can be detected. Hunt[2] has made a "physiologic assay" of the distribution of cholin in the blood and other body fluids under a large variety of conditions in which the compound has been alleged or might be expected to be a pathogenic factor. Cases of dementia praecox, chronic meningitis, cerebellar tumor, syringomyelia, congenital hydrocephalus and thyroid disease were examined among others, and experimental nephrectomies and suprarenalectomies were also included. In none of these experimental or pathologic conditions was a marked increase in the amount of cholin in the blood serum or cerebrospinal fluid found. There was likewise no evidence of the pathologic occurrence of any of the very active compounds of cholin preformed in the blood. It is unnecessary to review here further details of Hunt's newest researches. Cholin introduced into the circulation disappears from the blood with great rapidity. In view of this fact, even with the extremely delicate test now in use, one cannot assert dogmatically that there cannot be some increased production of cholin under pathologic conditions and that cholin may not after all be a factor in the causation of certain symptoms. Hunt sums up his own view by saying that at present we have no grounds for believing that cholin does have any significance in physiologic or pathologic processes, however attractive such a hypothesis may be.

THE SENSIBILITY OF THE VISCERA

A clinical neurologist, asked to state his opinion of the value of psychology for medical students, replied that the patients and not the physicians should be the psychologists. In internal medicine much depends on the ability of the patient to describe and locate accurately his sensations; from the localized pain, the physician must infer the seat of the pathologic process. Until recent years, little was understood concerning sensations that were mediated by the abdominal and thoracic viscera, and the mechanism by which any impression is localized on the surface of the body. Indeed, it has been claimed[1] that the heart, lungs, arteries and the abdominal viscera were insensitive to stimuli of any sort. That perforating wounds of the thorax or abdomen, inflammations and tumors were painful was explained by the fact that the parietal peritoneum was involved. The parietal peritoneum was held, by these writers, to be sensitive. Lennander's view, which was based on surgical experiences, is curiously at variance with the anociassociation theory of Crile. The latter believes that all insults to tissues register their effects in the chromophil substances of the cells of the central nervous system

1. Lennander, K. G.: Ueber die Sensibilität der Bauchhöhle und über lokale und allgemeine Anästhesie bei Bruch- und Bauchoperationen, Centralbl. f. Chir., Feb. 23, 1901.

and the endocrine organs. These effects are always in the direction of depletion. An enterprising investigator[2] has recently attempted to settle conclusively the question of the sensibility of all parts of the alimentary tract which could be reached by exploratory instruments from either end. He desired to determine the various sensations which may be felt in different parts of the alimentary tract, and also to show the localization on the surface of the body of the sensations which were thus aroused. His results contribute materially to the symptomatology of internal medicine. By means of tubes specially constructed for his work, Boring[2] was able to apply to the wall of the esophagus, the colon and the rectum thermal, mechanical, electric and chemical stimuli. With his apparatus, it was possible to regulate the intensity of the stimulus and furthermore to localize exactly on the surface of the body the point to which the internal stimulus was referred. The esophagus is sensitive to warmth above 40 C. (104 F.) and to cold below 35 C. (95 F.). Temperatures above 60 C. (140 F.) were felt as heat. The sensations from the esophagus are referred either upward toward the throat or downard toward the epigastrium. Curiously enough, points between the clavicle and the nipples may be referred in both directions. Transverse reference is never more than 1 cm. from the midsternal line in either direction. Sensations in the stomach are localized much more accurately than in the esophagus. Stomach stimuli are always referred to the adjacent anterior body wall. Boring's results confirm in large measure the conclusions of Head with regard to the doctrine of referred pain. The question of the quality of the visceral sensations is not yet satisfactorily answered. Given a sufficiently strong stimulus, some sensation will be aroused. Whether the sensation was due to sense organs in the viscus itself or to a diffusion of the stimulus to the adjacent body wall has not been made clear. Boring found that hot and cold enemas failed to produce thermal sensations in the colon. Such stimuli are sensed as pain. It is a significant fact that both esophagus and rectum are much more sensitive to all sorts of stimuli in the region about the external opening. These facts indicate that the distinction between protopathic and epicritic sensations which was drawn by Head, Rivers and Sherren, as a result of their experiments on sensory nerves in man, is fundamentally sound.

STRONTIUM SALICYLATE NOT SUPERIOR TO SODIUM SALICYLATE

Sodium salicylate is a valuable drug. It is official and cheap; it is the compound generally relied on when salicylate effects are desired. And there is no mystery about it. With the other salicylates, mystery begins. For this reason, such studies as that of Blankenhorn on strontium salicylate[3] are of special value. Blankenhorn shows that strontium salicylate possesses no advantages over sodium salicylate, as regards either therapeutic efficacy or freedom from undesirable by-effects. He calls attention to the fact that "the salicyl content of strontium salicylate is about four-fifths that of sodium salicylate based on the amount of available anion." The question naturally arises whether this smaller salicylate content may not contribute to the notion that strontium salicylate is less likely to cause salicylism. The impression as to the greater freedom of this salt from undesirable by-effects may have arisen in part also from the fact that the more expensive preparations are more likely to be given in small doses than is the cheaper sodium salicylate. As Blankenhorn suggests, when once such a tradition gains currency, it will be "lugged along" from one textbook to another, with little or no attempt at critical examination.

HAZARDS IN HANDLING GASOLINE

During 1913 in the United States 1,040 persons were burned to death and 3,120 persons injured (a weekly average of twenty persons killed and sixty persons injured) on account of gasoline fires.[1] In harmony with experience respecting human ways and human indifference, the increasing use of gasoline and other liquid fuels which are dangerous because of their ready inflammability will probably increase the number of accidents which cause loss of life as well as great damage to property. Miscellaneous hazards in the use of the inflammable products exist which lead to leakage of these volatile substances and their ignition by spontaneous and unsuspected methods, as well as those due to obvious carelessness. A feature, however, which is not readily comprehended and which is a serious source of danger is the fact that gasoline or gasoline vapor burns, but a mixture of the vapor and air is highly explosive. The Bureau of Mines illustrates the situation in these words: If one takes the cover off a full pail of tightly enclosed gasoline and applies a match to the surface, the gasoline will flare up and burn as long as the gasoline lasts. On the other hand, if one puts a few drops of gasoline in a small tightly enclosed pail, waits a few minutes, and then introduces a flame or an electric spark, a violent explosion will most likely result. In the first case the vapor burns as fast as it comes from the gasoline, and mixes with the oxygen of the air; in the second, the oil vaporizes in the pail and mixes uniformly with the air in it to form an explosive mixture, and on ignition explodes. Consequently, when one hears of a disastrous gasoline explosion one may be sure that it resulted from the mixing of the vapor from the gasoline with air in the proportions necessary to form an explosive mixture. The behavior of illuminating gas, which burns quietly when liberated alone, but explodes when a mixture with air is heated, is quite analogous. The public has been slow to appreciate these distinctions, and hence they deserve emphasis. At ordinary temperatures, air will hold from 5 to 28 per cent. of gasoline vapor. As gasoline vapor is about three times

2. Boring, E. C.: The Sensations of the Alimentary Canal, Am. Jour. Psychol., 1915, xxvi, 1.

3. Blankenhorn, M. A.: Strontium Salicylate, THE JOURNAL A. M. A., this issue, p. 331.

1. This statement is based on the authority of G. A. Burrell (Hazards in Handling Gasoline, Technical Paper 127, Dept. of the Interior, Bureau of Mines, 1915).

as heavy as air, in a room containing a mixture of the vapor with air the vapor is found in largest proportion near the floor. According to the government experts there is needed only a small proportion of gasoline vapor to render air explosive — 1.4 cubic feet of the vapor to 97.5 cubic feet of air. One gallon of gasoline can under ideal conditions render 2,100 cubic feet of air explosive. A dangerous feature of gasoline vapor is that it may travel a considerable distance from the gasoline and there be ignited, the flash traveling back to the container of the liquid and causing a roaring fire in a few seconds.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Hospital Leased.—The trustees of the Michael Meagher Hospital, Texarkana, have leased the building to the Sisters of the Incarnate Word of Galveston, for five years. The hospital will be renovated at an expense of $15,000 and will be reopened in a short time.

Personal.—Dr. Claiborne J. March, Fordyce, fell at his home, January 14, fracturing his right leg.——Dr. Edwin P. Bledsoe has been appointed superintendent of the State Hospital for Nervous Diseases, Little Rock, succeeding Dr. Frank B. Young, resigned.——Drs. Patrick Murphy, Little Rock, and Robert E. Rowland, El Dorado, have been appointed to vacancies on the staff of the State Hospital for Nervous Diseases, Little Rock.——Dr. Samuel W. Colquitt, Cummins, has been appointed penitentiary physician, succeeding Dr. William W. Coulter, Cummins, retired.——Dr. Alfred G. Hearn, McGehee, has resigned as division surgeon of the Iron Mountain System, and has been succeeded by Dr. William H. DeClark, McGehee.——Dr. Morgan Smith, dean of the medical department of the University of Arkansas, Little Rock, who resigned, December 20, has been persuaded to withdraw his resignation.——The home of Dr. Reuben Y. Phillips, Malvern, was damaged by a recent fire to the extent of $1,500.——Dr. Harry H. Smiley, Texarkana, has been appointed chief surgeon of the Cotton Belt System, succeeding Dr. Charles A. Smith, deceased.

DISTRICT OF COLUMBIA

Sternberg Memorial.—The Medical Society of the District of Columbia and the Association for the Prevention of Tuberculosis of the District held a joint meeting, January 19, in memory of the late Surgeon-General George M. Sternberg, U. S. Army. Addresses were delivered by Drs. George M. Kober, William C. Gwynn and Harvey W. Wiley.

Georgetown Faculty Appointments.—Lieut.-Col. Edward Lyman Munson, M. C., U. S. Army, has been appointed professor of preventive medicine in the medical department of George Washington University, and Dr. William D. Tewksbury, clinical instructor in medicine. Drs. Louis B. Castell, James H. Collins, Everett M. Ellison and J. Ward Mankin have been appointed instructors in pharmacology.

Hospital to New Quarters.—Columbia Hospital for Women has moved into its new building, immediately to the east of the old structure, on the same site. The building was erected under the supervision of Mr. Elliott Woods, superintendent of the United States Capitol, at a cost of $300,000 for construction and $90,000 for maintenance. As the hospital is a quasigovernment establishment, the money was provided by Congress.

FLORIDA

Personal.—Dr. William A. Claxton, Jacksonville, started for Montreal, January 10, to join the Canadian Army Medical Corps. He has been assigned as bacteriologist to the Military Hospital in Cairo, Egypt.——Dr. James M. Jackson, Jr., has been reelected president of the Miami Board of Health.

Hospital News.—Citizens of Manatee are discussing the erection of a hospital in that city.——The Jacksonville Free Public Hospital Association is resuming active work and the association proposes to establish a hospital with accommodations for 200 patients. It is proposed to have a bond issue of $120,000 for this purpose.——Richard C. Lake, Tampa, has agreed to erect at his own expense, an annex to the Morton F. Plant Hospital for use as an operating department and in addition, completely to equip it. This will cost about $5,000.

Society Meetings.—At the meeting of the Dade County Medical Society held in Miami, December 2, Dr. C. Frederick Sayles was elected president; Dr. Henry C. Babcock, Miami, vice president, and Dr. George H. Benton, Miami, secretary-treasurer.——The Tri-County Medical Society of Lee, De Soto and Polk counties was organized at Bartow, January 3, with an initial membership of thirty. Dr. J. Ernest Brecht, Fort Myers, was elected president; Dr. Samuel F. Smith, Lakeland, vice president; and Dr. Heber P. Newman, Bartow, secretary-treasurer.

State Health Train.—The demonstration train of the State Board of Health started on its initial trip, January 10. The train consists of three Pullman cars, the first of which is used as an office with sleeping and dining accommodation for the demonstrators. The second contains the dynamo, sleeping quarters for the train crew, and various models such as the illustration of the Imhoff tank sewerage disposal system, contamination of water in driven or open wells from polluted or service water; a modern dairy, proper feeding and clothing of babies; open-air treatment of tuberculosis and other similar questions of public health. In the third car are displayed thirty-six panel posters giving warnings and advice on sanitary subjects and disease prevention and a large stereomotograph. On the initial trip the train was in charge of Dr. Joseph Y. Porter, state health commissioner, and Miss F. D. Herndone, his assistant. Surg. Carroll Fox, U. S. P. H. S., also accompanied the train to inspect health conditions in the state and to observe the workings of this plan of popular sanitary education.

GEORGIA

State Board Changes.—At a meeting of the State Board of Health, January 11, the resignation of Dr. Henry F. Harris, secretary, was received and laid on the table and a committee of three consisting of Drs. William H. Doughty, Augusta; James H. McDuffie, Columbus, and Thomas J. McArthur, Cordele, was appointed to canvass the field for a successor. Dr. Howard J. Williams, Macon, was elected president, and Dr. William H. Doughty, vice president of the board.

Personal.—Dr. Olin H. Weaver has been elected chairman of the medical staff of the Macon Hospital.——Dr. W. E. Quillian was reelected president of the board of health of Atlanta, January 14.——Dr. William S. Elkin, Atlanta, has been elected chief surgeon, and Dr. William S. Goldsmith, assistant chief surgeon of the Atlanta, Birmingham and Atlantic Railway Company.——Dr. William B. Orear, Savannah, has been appointed chief surgeon of the Midland Railway.——Dr. James McFadden Gaston, Atlanta, has returned after seven years' service as a medical missionary in China.——Dr. Thomas R. Wright, Augusta, has been appointed a trustee of the State Sanatorium, Milledgeville.

Public Health in Savannah.—According to the report of Dr. William F. Brunner, health officer of Savannah, the death rate for 1914 in that city was considerably lower than that of any other year since statistics have been kept. Of deaths from natural causes the rate per thousand for four years, 1911-1914, was as follows: 24, 21.48, 18.98, 18.49, respectively. The five chief causes of death were tuberculosis, nephritis, pneumonia, heart disease and pellagra. Tuberculosis in the white race shows a steady reduction each year, but the disease is on the increase among the colored race on account, it is said, of bad housing conditions. The deaths among children under 10 years of age for the four years, 1911-1914, were as follows: 518, 370, 379, 390, respectively. The population during this period increased from 75,000 in 1911 to 81,000 in 1914. There were 124 cases of typhoid fever in the city with sixteen deaths, eleven of which were among negroes. The health officer deplores the fact that less than 80 per cent. of the births were recorded and blames the defective figures on the medical profession. He somewhat drastically says that it is easier to trace the pedigree of a

fine horse, dog or hog in Georgia than of the average citizen. The state, during 1914, enacted a vital statistics law but failed to make an appropriation to carry it out. The pamphlet also contains the report of the city bacteriologist, Dr. Victor H. Bassett, which is in a creditable and up-to-date form, as is also the report of the chief food inspector, D. C. Gillis, D.V.M., who was appointed after a competitive examination in various cities of the United States.

ILLINOIS

Smallpox.—H. J. Fallon, a manual training instructor in the schools of Evanston, was taken to the isolation hospital, January 14, suffering with smallpox. Children in the schools have been ordered vaccinated, or they must remain out of school twenty days.

Personal.—Dr. James I. Hale, Anna, has recovered after an operation for strangulated hernia performed at St. Mary's Infirmary, Cairo, January 13.——Dr. Leander D. Keith, Anna, fell from a buggy, recently, sustaining a fracture of the left arm above the elbow. He is said to be making satisfactory progress toward recovery.——Dr. Charles E. Sisson, Elgin, has gone to California to become assistant superintendent and chief of the medical staff of a state hospital.——Dr. Edward H. Weld, Rockford, has been appointed a member of the staff of St. Mary's Hospital, Rochester, Minn.——Dr. Walter A. Hodges, Nokomis, is reported to have disposed of his property holdings and practice and will locate in Chicago. ——Dr. John H. Rice, Quincy, is reported to be seriously ill with disease of the gallbladder.——Dr. William E. Wiatt, East St. Louis, is said to be ill with diphtheria.

Chicago

Rabies.—At Englewood, January 17, five persons were bitten by a dog which was found at the city laboratories to be suffering from rabies. The victims were urged to take the Pasteur treatment at the Iroquois Hospital without delay.

New Hospital at South Chicago.—The finance committee of the board of commissioners of Cook County has promised that plans for building an emergency hospital for South Chicago to cost $100,000 will be considered by the board this year. Preliminary plans for the building will soon be submitted.

Ophthalmologists Meet.—At the annual meeting of the Chicago Ophthalmological Society, January 17, the following officers were elected: president, Dr. William E. Gamble; vice president, Dr. Francis Lane; secretary-treasurer, Dr. Paul Guilford (reelected), and councilor, Dr. J. Sheldon Clark, Freeport (reelected).

Chicagoans Far Afield.—Dr. H. Gideon Wells of the University of Chicago was the guest of honor at a banquet at the Fort Pitt Hotel, Pittsburgh, January 18, after which he delivered a lecture before the Allegheny County Medical Society in which he described his original research work on the subject of cancer illustrated by stereopticon pictures.—— Dr. Emil G. Beck spoke before the Iowa and Illinois Central District Medical Association meeting at Davenport, January 13, on "Technical Points on the Application of Bismuth Paste in the Treatment of Suppuration."

MARYLAND

Baltimore County Physicians Elect Officers.—The annual meeting of the Baltimore County Medical Association was held January 19, and officers were elected as follows: president, Dr. J. Carroll Monmonier, Jr., Catonsville; vice president, Dr. Frank C. Eldred, Sparrows Point, and secretary-treasurer, Dr. Martin F. Sloan, Towson.

Personal.—Two former members of the staff of Johns Hopkins Hospital have been decorated by Germany for their services in the medical corps of the German army. Dr. Karl H. Van Noorden, Jr., who was attached to the medical staff at the Hopkins was decorated with the iron cross of the second class after the battle of Lodz, in which he was shot through the hip. Dr. Felix Landois, who was also on the surgical staff, organized and is now surgeon-in-chief of a field hospital at Ledeghen, Belgium. He has been decorated with the iron cross of the second class and with the Order of Frederick, bestowed by the King of Wurttemberg.——Dr. Joseph Irwin France, Port Deposit and Baltimore, has announced his candidacy for the nomination for United States senator.——Dr. George Y. Everhart, Hillsdale, a prominent physician of Baltimore County, is reported to be critically ill.——Dr. William H. Bash, in charge of the accident ward of Mercy Hospital, Baltimore, has been reappointed.——Dr. Roy D. McClure of the resident staff of Johns Hopkins Hospital has accepted the position as surgeon-in-chief of the Henry Ford Hospital, Detroit.

Report of Tuberculosis Committee.—The state-wide tuberculosis committee appointed in May, 1915, to study the problem of consumption in Maryland and to make recommendations for a definite state policy in regard to its most important phases, held a meeting January 15, presided over by Dr. John S. Fulton. The report of the committee favors the establishment of county hospitals for negroes suffering from tuberculosis, such hospitals to be established in connection with the present county institutions and the equipment of wards for negro patients in the hospitals of Baltimore and the eight other cities of the state which receive government aid (Cumberland, Hagerstown, Frederick, Annapolis, Elkton, Easton, Cambridge and Salisbury). It suggests that the cheapest investment that the state can make in the prevention of the spread of the disease is the appropriation of $20,000 each to the hospitals in the eight cities reported and of $50,000 to the Baltimore hospitals for the construction of these tuberculosis wards and an allowance of one dollar a day for the maintenance of each patient. To provide for patients who could not be allowed without danger to themselves and others to return to their original vocations, the committee suggests tentatively the establishment of industrial colonies in connection with the county hospitals. The committee is strongly of the opinion that the most potent force against the spread of tuberculosis is the establishment of hospitals for advanced cases.

MICHIGAN

Election.—The Antrim, Charlevoix and Emmet Counties Medical Society at its meeting in Petoskey, January 14, elected Dr. John J. Reycraft, Petoskey, president; Dr. Allan M. Wilkinson, Charlevoix, vice president; and Dr. George W. Nihart, Petoskey, secretary-treasurer.

Committee of Arrangements for State Meeting.—Dr. Philip D. Bourland, Lake Linden, president of the Houghton County Medical Society, has appointed the following committee on arrangements for the meeting of the Michigan State Medical Society: Drs. Arthur F. Fischer, Hancock; William K. West, Painesdale; Peter D. MacNaughton, Calumet; James G. Turner, Houghton; Neil S. Mac Donald, Mohawk, Keweenaw County, and Simon Levin, Lake Linden.

Contagious Diseases.—At Jackson it was found from the records of the city health department that during the previous ten years $31,000 had been paid to fifty-six physicians for medical attendance on contagious diseases. Six of the fifty-six physicians, it is said, received $16,000 of the total amount. A new arrangement has been made by which the physician and nurse shall be regularly employed to take care of such cases. A change has been made in the quarantine methods in contagious diseases. The patient hereafter will be isolated in his home and the working and earning members of the family will be allowed to follow their usual occupations. The patient will be under the strict supervision of the contagious disease physician and nurse, and every precaution will be taken to prevent the spread of the disease from the patient.

MISSISSIPPI

Malaria.—Dr. Charles C. Bass of Tulane University, New Orleans, has been appointed head of a group of workers to study malaria in Mississippi under the direction of the international health commission. Dr. Bass will have, as one of his assistants, Dr. Foster M. Johns, also of Tulane, and will be associated in the work with Dr. Waller S. Leathers, University of Oxford, head of the health department of Mississippi.

Medical Society Meetings.—The Lamar-Marion-Pearl River Counties Medical Society met in Lumberton, December 25, and elected the following officers: president, Dr. Edwin W. Mackey, Purvis; vice presidents, Drs. Louis C. Rouse, Poplarville; Charles C. Thompson, Columbia, and Robert W. Thompson, Lumberton; and secretary-treasurer, Dr. Daniel B. Stevenson, Lumberton.——George-Perry-Greene Counties Medical Society met at Richton, December 14, and elected the following officers: president, Dr. Reuben M. Cochran, Richton; vice presidents, Drs. Joseph W. Copeland and Russell Graves, both of Richton; and secretary-treasurer, Dr. S. Lewis Knight, Merrill, reelected.——Newton-Winston-Neshoba Counties Medical Association at its annual meeting in Newton, December 18, elected the following officers: president, Dr. Thomas E. Jarvis, Neshoba; vice presidents, Drs. Thomas W. Reagan, Beechsprings, and John S. Laird, Union; and secretary-treasurer, Dr. Sidney A. Majure, Dixon.

MISSOURI

Drops Eclecticism.—A report states that the Eclectic Medical University of Kansas City, an institution reported not in good standing by the State Board of Health, has changed its name to the Kansas City College of Medicine and Surgery.

Society Gives Smoker.—The Kansas City Eye, Ear, Nose and Throat Society gave a smoker at the University Club, January 13, at which fifty physicians of Kansas City, Leavenworth, Atchison, Topeka and St. Joseph were present. Five papers were presented.

Personal.—Dr. William D. Fulkerson, Trenton, has been confined to his home with a severe attack of erysipelas.——Dr. Ralph E. Castelaw, Kansas City, has been appointed superintendent of the new Wesley Hospital, Kansas City.——The office of Dr. John R. Smith, Warsaw, was destroyed by fire, December 23.——Dr. Charles A. Lusk, Butler, suffered a loss of about $3,000 when his residence was destroyed by fire, December 2.——Dr. John P. Ralston, Springfield, is reported to be critically ill as the result of repeated cerebral hemorrhages.——Dr. Herbert C. Kimberlin, Clarksdale, has been appointed assistant physician of State Hospital No. 2, St. Joseph, succeeding Dr. Calvin L. Woolsey, Braymer.——Dr. Philbert R. Williams, Cape Girardeau, is reported to be seriously ill with septicemia due to an infection of the hand.——Dr. William L. Gist has been appointed assistant health commissioner of Kansas City, and assistant medical director of the new tuberculosis hospital.

St. Louis

Virginian in St. Louis.—Dr. John Shelton Horsley, Richmond, Va., was the guest of honor of the St. Louis Medical Society, January 22, and read a paper on "Blood Vessel Surgery."

Personal.—Dr. William W. Graves, while skating recently, fell and fractured his arm.——Dr. Fred T. Murphy has joined the American Ambulance at Neuilly, France, and will return to St. Louis May 1.

Not the Same Rotter.—Dr. Julius Rotter, formerly of Parsons, Kan., was recently convicted of wife abandonment in St. Louis and sentenced to six months in the workhouse. The publicity given this matter has caused Dr. Julius Charles Rotter considerable embarrassment on account of the similarity of the names. Dr. Rotter is not related in any way to the convicted man.

Suit Against Board of Education.—Suit has been filed in the circuit court by several citizens, including three physicians, against the board of education to restrain the board from using school funds to maintain the department of hygiene which conducts the medical examination of schoolchildren. The petition alleges that this use of the school fund is not sanctioned by law.

NEW YORK

The Disposal of Seized Drugs.—Assemblyman Moritz Bloch has introduced a bill providing that habit-forming drugs seized by the New York City authorities be turned over to the Department of Charities and Corrections to be used in the city hospitals, and that outside of New York City such drugs shall be turned over to hospital authorities in such county or municipality as the district attorney directs.

New York City

Personal.—Dr. Max Lubman has been appointed associate otologist to the Har Moriah Hospital, New York.——Drs. Cornelia C. Brant, Mary L. Hines and Mabel C. Sisson have been appointed members of the staff of the Cumberland Street Hospital, Brooklyn.

Bronx County Medical Society.—At the annual meeting of this organization held January 12, the following officers were elected: president, Dr. John E. Virden; vice presidents, Drs. J. Lewis Amster and Edward F. Hurd; secretary, Dr. Herman T. Radin, and treasurer, Dr. Philip Eichler. At the close of the executive session Dr. Charles H. Mayo, Rochester, Minn., read a paper on "Gallbladder Disease, Its Etiology, Symptoms and Treatment," with accompanying stereopticon views. After the scientific meeting a supper was held in honor of Dr. Mayo.

The Antispitting Campaign.—During the second week of January over 1,500 persons were brought into the magistrates' courts for violation of the ordinance forbidding spitting in public places. Practically all of these were fined, the fines ranging from $1 to $10. The department of health calls attention to the fact that the chief value of such a campaign lies in its educational effect, and this phase of the campaign is largely dependent on newspaper publicity. Hence it is essential that the campaign be so spectacular in character as to gain a high news value. This end is better attained by intensive sporadic efforts than by the same amount of effort spread over a period of months which would secure no newspaper attention.

NORTH CAROLINA

Chiropractor Guilty.—The North Carolina supreme court has recently reversed the decision of the superior court of Guilford County and found O. V. Siler, a chiropractor, guilty of practicing "for fee and reward, without license, as a non-drug giving physician." Siler had been found guilty by the municipal court of Greensboro, but had been declared not guilty by the superior court. Now the decision has again been reversed by the state supreme court.

Health Administration.—Beginning April 1, in Edgecombe County, there will be placed in charge of the public health interests a U. S. Public Health Service representative who will endeavor to work out a model county health administration. The study will embody the best features of the excellent work now being done in several counties in North Carolina, and as well combine other features believed to be essential to the fullest development of the best values in county health work. The progress of the work will be watched with interest by sanitarians within as well as without the state.

PENNSYLVANIA

To Rename Hospital.—As a result of William L. Elkins' latest gift of $250,000 to the endowment fund of the Abington Memorial Hospital, a movement has been started to have the name of the institution changed to the Elkins Memorial Hospital. Mr. Elkins founded the hospital as a memorial to his wife, Stella M. Elkins.

Public Service Bureau Appointed.—In order to obtain state-wide enforcement of the act requiring the semiannual inspection of all cooks, waiters, kitchen help or other servants employed in hotels, restaurants, dining cars or other public eating places, to exclude those suffering from certain communicable diseases from employment, a bureau of public service has been created by State Health Commissioner Dixon.

Disinfection.—A rule has been made by the board of health at Altoona that hereafter disinfection of rooms in which patients with contagious diseases have been confined will be done free in cases in which the occupants cannot pay. Previously a charge of 50 cents per room was made, but it is the opinion of Health Officer Myton that it is the business of the health department to prevent the spread of disease and not to collect fees.

Allegheny Physicians Elect.—At the annual meeting and banquet of the Allegheny County Medical Society at Pittsburgh, January 11, the following officers were elected: president, Dr. William W. Jones; vice president, Dr. Ellis S. Montgomery; secretary, Dr. Carey J. Vaux, and treasurer, Dr. William C. Bryant. Plans were discussed at this meeting for the building of a permanent home for the society to cost $75,000, and Dr. William H. Mercur, chairman of the permanent home committee, reported that he had already received promises of donations of $1,000 each from twenty-five members of the society.

Personal.—Dr. John A. Fritchey, Harrisburg, is under treatment in the Presbyterian Hospital, Philadelphia, debilitated from overwork and influenza.——Dr. Samuel G. Dixon, state health commissioner, Harrisburg, is reported to be ill with influenza.——Dr. Harry M. Keller, Hazelton, has been appointed by the governor a member of the board of trustees of the Hazleton State Hospital.——Dr. Walter Lathrop, superintendent of the Hazleton State Hospital, who underwent operation in New York City more than a year ago, is suffering from a recurrence of the trouble.——Dr. John F. Zychowitz, South Scranton, suffered severe burns of both forearms recently from an explosion of gasoline in his garage.——Dr. Leonard G. Reading, Dunmore, fractured his right wrist while cranking his automobile, December 31.——Dr. William G. Marsh, Watsontown, fell, January 1, fracturing his hip.——Dr. James M. Maurer, Shamokin, has been appointed chief surgeon of the Susquehanna Coal Company and has appointed the following assistants: Dr.

George M. Stites, to be in charge at Williamstown and Lykens; Dr. Jesse H. Hughes, Nanticoke, to be in charge of the Nanticoke district; Dr. Ralph W. Montelius, Mount Carmel, and Dr. Adna S. Jones, Shamokin.

Philadelphia

Cuban Eye Specialist Lectures. — Dr. Juan Santos Fernandos, an ophthalmologist of Havana, Cuba, and president of the Cuban Academy of Science, delivered an address in Spanish, January 4, before the Wills Eye Hospital Ophthalmic Society.

Pneumonia Commission Appointed. — Health Director Krusen has appointed a commission to make intensive study of the causes of grip and pneumonia. The members of the commission are Drs. David Riesman, Hobert A. Hare, Judson Daland, William Egbert Robertson, Randle C. Rosenberger, Paul A. Lewis and John A. Kolmer.

Packard Lecture.—The Fred A. Packard lecture of the Philadelphia Pediatric Society will be delivered at the College of Physicians, Twenty-Second and Chestnut Streets, February 8, at 8:15 p. m. by Prof. Charles M. Campbell of Johns Hopkins Medical School, Baltimore, on "The Neurotic Child, Some Familiar Symptoms and Their Problems."

Scarlet Fever at University.—Another outbreak of scarlet fever, from which two students died when the contagion first appeared, has occurred at the University Hospital and two nurses have been sent to the Philadelphia General Hospital for Contagious Diseases, a student has been quarantined at his home, and the students' ward in the hospital has been isolated.

City Nurses Teach the Little Mothers' Leagues.—Under the instruction of seventeen nurses from the Department of Public Health and Charities, "Little Mothers'" leagues were organized, January 11, in seventeen school buildings throughout the city. These leagues formed under the auspices of the division of hygiene of the child federation began the study of the essentials of making capable mothers of hundreds of little girls enrolled from among the pupils in elementary schools.

Fellowship in Obstetrics.—A fellowship amounting to $1,000 has been established at the Woman's Medical College of Pennsylvania, to be awarded by the faculty annually to any medical woman of special ability who, following the medical course, has completed at least one year of hospital service, including work in maternity wards, and one year of further practice. The amount is to cover twelve months of special work as fellow in obstetrics, with the condition that the holder of the fellowship shall thereafter continue in the practice of obstetrics.

Personal.—Dr. J. William White, who has been ill at the University Hospital for some time, has returned to his home much improved in health.——Dr. Charles Miller has been appointed chief of the division of vital statistics.——Dr. Ellwood R. Kirby has been appointed medical director of St. Mary's Hospital.——Dr. Daniel J. McCarthy, recently returned from the war, was the guest of honor at the annual banquet of the Medical Examiners' Association at the Hotel Walton, January 20.——Dr. Francis D. Patterson has been appointed chief of the division of industrial hygiene and engineering of the bureau of inspection in the state department of labor and industry, succeeding Dr. John C. Price, deceased.——Dr. Richard H. Harte sailed from New York, January 8, to serve as one of the chief surgeons of the American Ambulance, Paris.——Dr. Ross V. Patterson has been appointed visiting physician to the Philadelphia General Hospital.——Dr. Carlton N. Russell has returned after service with the American Ambulance in Paris.——Dr. Alexander C. Abbott has withdrawn his resignation as a member of the board of health.

VIRGINIA

New Hospital Opens.—The Newport News General Hospital was opened December 31. St. Francis' Hospital closed on the same day and the patients cared for there were removed to the new hospital.

New Officers.—Richmond Academy of Medicine and Surgery: president, Dr. William L. Peple; vice presidents, Drs. St. Julian Oppenhimer, Oliver F. Blankenship and Ramon D. Garcin; secretary, Dr. Mark W. Peyser (reelected), and treasurer, Dr. James H. Smith.

Personal.—Dr. Joseph A. Gale, Roanoke, who has been under treatment in the Johns Hopkins Hospital, Baltimore, is reported to be rapidly regaining his health.——Dr. Frederick M. Hodges, Richmond, has been appointed associate physician in the tuberculosis department of the Richmond City Home.——Dr. Estelle H. Henderson has succeeded Dr. John C. King, resigned, as superintendent of the Southwestern State Hospital, Marion.

WISCONSIN

New Officers.—The Milwaukee Medical Society: president, Dr. Frank C. Studley; vice presidents, Dr. Albert W. Myers and Emerson A. Fletcher; secretary, Dr. Oscar Lotz; treasurer, Dr. Joseph P. McMahon.——Ashland-Bayfield and Iron Counties Medical Society at Ashland, December 30: president, Dr. William T. O'Brien; vice president, Dr. John V. Wenzel; and secretary, Dr. Otto Braun.

Health Bulletin Boards.—Health Commissioner Ruhland has asked an appropriation of $3,000 from the board of estimates of Milwaukee as a publicity fund for health protection and disease prevention. He desires to widen the magazine publicity work and also to erect bulletin boards in different sections of the city.——The Milwaukee Electric Company has donated to the health department, one advertising space in each car for its daily health protection and disease prevention cards.

Personal.—Dr. Louis A. Fuerstenau has been elected president and Dr. Robert W. Blumenthal, secretary of the Emergency Hospital, Milwaukee.——Dr. John R. McDill, Milwaukee, was honored, January 10, when the senate and assembly of the Philippine Islands adopted resolutions setting forth the high degree of surgical and medical skill of Dr. McDill, his great devotion to his patients and his scrupulous observation of the principles of medical ethics.——Dr. George C. Ruhland, health commissioner of Milwaukee, has been ill with influenza.

Smallpox.—At Racine, January 6, by an order of the board of health, the Lincoln School, which had been closed, December 15, on account of smallpox, was allowed to reopen. The epidemic was said to be under control, and the twenty-five day period of exclusion of nonvaccinated children from the schools, as provided by the Wisconsin law, had expired. There were 123 children whose parents refused to permit them to be vaccinated. By the board's order they were to be allowed to go back to school. About 300 children were vaccinated during the epidemic.——The public school and parochial school in the town of Newton, south of Manitowoc, were ordered closed by the school board, December 21, on account of the discovery of six cases of smallpox in the district.

Sanatorium Notes.—Muirdale, the tuberculosis sanatorium for Milwaukee County, which was opened in November at Wauwatosa, lacks sufficient facilities for male patients and the superintendent has asked the county board to reopen Greenfield Sanatorium. Muirdale can accommodate about 275 patients and now has more than 160 and applications are coming in so rapidly that the capacity of the institution will very soon be taxed.——The question of a sanatorium for Waukesha County was discussed by the county board at its December meeting and a committee of three was appointed to procure data, plans for the building and select a site.——Fifty acres of land adjacent to the Winnebago County Tuberculosis Sanatorium, Neenah, have been purchased and the land will be used to raise farm products for the institution.

CANADA

Gorgas Visits Toronto.—Surg.-Gen. William Crawford Gorgas of the United States Army addressed the Canadian Club, Toronto, January 17, on "Sanitation in Panama."

Students Return.—About twenty-five senior students on duty with No. 3 Canadian General Hospital in France have returned to Canada to complete their medical studies with a view of returning as medical officers if necessary.

Western Universities Offer Battalion.—A conference was held of representatives of four western universities in Edmonton, Alberta, January 15. They unanimously decided to offer to the Canadian militia department a battalion to be raised from B. C. University, Alberta, Saskatchewan and Manitoba.

Hospital Staff Soon to Be Mobilized.—The immediate mobilization at Toronto of the medical officers and nurses for the staff of the Ontario Hospital at Orpington, Kent County, England, has been ordered from the militia department, Ottawa. Thirty-two doctors and eighty-one nurses from all parts of Ontario are to be selected. It is likely that the commanding officer will be selected from Canadian officers

now in England. The orders for mobilization have been received by Lieutenant-Colonel Marlow, A.D.M.S., Toronto.

Hospital News.—Sixteen members of No. 3 McGill Base Hospital, which has been located in France, have arrived in Montreal to complete their fifth year in medicine. Col. Herbert S. Birkett, in command of the hospital, accompanied them. This hospital dealt with over 3,000 cases between August 6 and November 15.——Dr. Zephyr Rhéaume, chief surgeon at the Hotel Dieu Hospital, Montreal, will accompany No. 6 General Hospital, Laval University, as chief surgeon with the rank of lieutenant-colonel. The hospital was organized by Lieutenant-Colonel Beauchamp. This hospital has been changed from a stationary to a general hospital.

Personal.—Dr. J. S. McCallum, Smith's Falls, Ont., has three sons somewhere in France. All are Canadian university graduates, one, Lieut. John S., being attached to the tenth Gloucester regiment as surgeon.——Dr. Harriet Cockburn, a Canadian physician, arrived in New York from Bordeaux, January 19.——Drs. Kennedy, Wilkes, Wilson, Baby and Neilson, formerly noncommissioned officers attached to No. 3 Canadian General Hospital, have been commissioned captains in the Canadian Army Medical Corps. ——Dr. Campbell P. Howard of the University of Iowa, who has been on active service for the McGill Hospital in France with rank of major, has returned home.——Dr. Scott Huntingdon, said to be a prominent physician of Havana, and an American citizen, has offered himself to Sir Sam Hughes, the Canadian minister of militia, for overseas service. Dr. Huntingdon was recently in Ottawa after giving up his practice in Havana. He will be given a commission in the Canadian Army Medical Corps.——Dr. Charles J. Copp, Toronto, honorary secretary-treasurer of the Ontario Council St. John Ambulance Association, has been created a Knight of Grace of the Order of the Hospital of St. John of Jerusalem in England.——Dr. Hubert Brown, Cooksville, Ont., has been recommended for medical officer of the One Hundred and Sixty-Ninth Battalion. Dr. Brown served in the South African War.——Lieut.-Col. Murray Maclaren, St. John, N. B., a past president of the Canadian Medical Association, and at present commanding officer of a Canadian general hospital in England, has been made a companion of the Order of St. Michael and St. George.——Lieut.-Col. Arthur Edward Ross, Kingston, Ont., a member of the Ontario legislature, and at present in command of the first field ambulance in France, has been made a commander of the Order of St. Michael and St. George.——Lieut.-Col. George Gallie Smith, of the Canadian Army Medical Corps, has been rewarded for service to the empire by being made a commander of the Order of St. Michael and St. George. ——Lieut.-Col. George G. Nasmith, Toronto, who is returning to France this month, has been rewarded for service to the empire by being made a commander of the Order of St. Michael and St. George.

GENERAL

Tuberculosis Standardization Committee Appointed.—The National Association for the Study and Prevention of Tuberculosis has appointed the following committee on standards for diagnosis of tuberculosis in children: chairman, Dr. James A. Miller, New York City; secretary, Bertram H. Walters, New York City; and Drs. Glenford L. Bellis, Wauwatosa; John Howland, Baltimore; Henry I. Bowditch, Boston; John H. Lowman, Cleveland; Isaac A. Abt, Chicago, and Orville W. McMichael, Chicago.

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Luke's Hospital, Orlando, Fla., a donation of $5,000, from "a friend in the north."

University of Oregon Medical College, a donation of $5,000, conditional on obtaining nine other gifts of the same amount; Presbyterian Hospital, New York City, $5,000, by the will of Archibald M. Stewart.

Chester County Hospital, Westchester, Pa., $6,000, for the endowment of a room in memory of the late Sarah Farley.

Philadelphia County Medical Society relief fund, the income of four fifths of the estate of Dr. William B. Banks, contingent on the death of his wife, his son, a friend of his mother's and his son, dying without issue.

Civic Federation Meeting.—The sixteenth annual meeting of the National Civic Federation was held at the New Willard Hotel, Washington, D. C., January 17 and 18, under the presidency of Mr. Seth Low, New York City. The chief topics of medical interest presented at the meeting were the reports of Augustus Belmont on "The Status of Workmen's Compensation Laws;" by Louis B. Schram on "The Causes of Industrial Accidents;" Dr. Woods Hutchinson on "Progress in Industrial Hygiene in Thirty Years," and Dr. E. E. Smith on "Changes in Food and Drug Supplies—Present Needs."

American Dye Stuffs.—According to *Commerce Reports*, American dye works are now turning out coal-tar colors at the rate of 15,000 tons annually. Before the war in Europe we manufactured only 3,300 tons, made mostly from imported intermediates. The total importation of colors before the war was 25,000 tons so that the amount manufactured at present in the United States is still short of the demand. The manufacture of what is called coal-tar crudes in this country has assumed large proportions, but at present most of them are absorbed in the manufacture of war munitions. There are, however, it is said, twelve firms engaged in turning out finished dyes.

Bill for the Care of the Tuberculous.—On January 8, Congressman Kent submitted to the House of Representatives a bill to standardize the treatment of tuberculosis in the United States, to provide federal aid in caring for indigent tuberculous persons, and for other purposes. The bill provided that the secretary of the treasury be authorized to aid state authorities in providing care and treatment for indigent tuberculous persons who are citizens of the United States, but not legal residents of the state in which they are temporarily located; that public or private hospitals and sanatoriums may be designated to receive such patients, and that from time to time such institutions be inspected by officers of the Public Health Service and their facilities for such treatment investigated. The subvention fixed annually by the secretary of the treasury, not exceeding 75 cents per day for each indigent patient, is to be paid toward such hospitals and sanatoriums by the secretary of the treasury, and a similar fee is to be paid by the state. Patients must submit satisfactory evidence that they did not leave their local residence in order to receive benefits under this act. The bill provides for the publication of information and descriptive matter relative to the institutions and working of the act, and for the publication of estimates as to the cost of carrying out the provisions of the bill.

FOREIGN

Prize Awarded to Kopke.—Prof. Ayres Kopke of Lisbon was recently awarded the prize offered by the Sociedade de geographia of Lisbon for the best work by a Portuguese writer on sleeping sickness.

Pure Milk in Guayaquil.—Efforts to secure pure milk for Guayaquil have been embodied in an ordinance which requires that permission must be obtained from the municipal authorities for the operation of a dairy, and only tuberculin tested cows may be kept.

Sanitary Stations in Colombia.—Under the law of the Colombian Congress of Nov. 8, 1915, the Junta Central de Hygiene (Bogota) has been authorized to begin the construction of a sanitary station at Buenaventura, and $20,000 has been appropriated for the purpose, with an additional $10,000 for the completion of the sanitary station, wards, bacteriologic laboratory and a pier at the Santa Marta sanitary station.

Personal.—Drs. Ricardo Sarmiento-Laspiur and Fernandi Ham, Buenos Aires, who are visiting in the United States, inspected Johns Hopkins Hospital, January 3.——Dr. Carlos Husk, chief surgeon for the Guggenheim mine interest in Mexico, has been chosen to take charge of the typhus situation in Northern Mexico. The health expedition will start from Laredo as soon as permission is obtained from President Carranza.

Quacks' Signs Come Down in Berlin.—The measures enforced by the military authorities against quacks and secret medicines in the German border states have been supplemented by the order for removal of the advertising signs and advertisements of secret remedies from the public comfort stations and the fronts of houses. Berlin is in Brandenburg which is the principal of these marches or buffer states, and the above measure is said to have been instigated by the Brandenburg medical chamber as the logical corollary of the repressive measures against quackery decreed by the military commander of the marches.

Deaths in the Profession Abroad.—B. V. Wicherkiewicz, professor of ophthalmology at the University of Cracow since 1895, aged 68. He was a leader in local medical and civic matters, serving as member of the city council, as chief of the voluntary first-aid organization at Cracow and as president of the Polish Medical Association at Posen. He founded in 1898 the first Polish ophthalmologic journal, and published annual reports from his eye clinic at Cracow and was a

frequent contributor to specialist literature. His name is connected with a method for iridectomy, for treating immature cataracts by rinsing, an operation for trichiasis, etc.——P. Heresco, professor of surgical diseases of the urinary apparatus at the University of Bucharest, Roumania, aged 47.

WAR NOTES

Kaiser's Palace to Be Hospital for Allies.—The British government has notified Greece that the summer residence of the emperor of Germany on the Island of Corfu has been taken by the allies for use as a hospital.

Facial Wounds.—Special hospitals and departments are being established for the treatment of facial wounds and recently $2,000 was appropriated by the American Red Cross for the establishment of a special hospital for this purpose in Paris, and a similar sum has been appropriated for a facial wounds department in the American Ambulance, Neuilly.

The Work in Turkey.—The American Red Cross has sent a contribution of $10,000 to the American ambassador in Constantinople for relief work in Turkey. The ambassador has arranged with the French and English governments to assume the responsibility of supplying the funds and maintenance of their respective hospitals under the direction of the American Red Cross.

To Help Those Blinded in Battle.—The American Red Cross Hospital, Munich, Bavaria, has concentrated its forces on the alleviation of suffering to those who have been blinded in battle, not only by treating the facial wounds, but also by the education of the blind in reading, writing and certain occupations. For this particular work the American Red Cross has appropriated $2,000.

Many Physicians Lost in War.—During a debate in the Hungarian Parliament, January 20, it was officially stated that from the beginning of the war until November 1 last, 373 German surgeons have been wounded, ninety-six have died on the battlefield, 707 have died from diseases and 215 have been taken prisoners.——The wounded Austrian medical officers numbered 315, and 971 have died from infectious diseases, 101 have been killed while rendering medical assistance on the firing line and 331 have been taken prisoners.

Red Cross Activities in Egypt.—The American Red Cross has authorized the formation of a committee of Americans in Cairo, Egypt, to handle European war relief work. The immediate activities are in behalf of more than 4,000 homeless Armenians who are being sheltered at Port Said. The Armenian Red Cross and Armenian Benevolent Society will aid in this work.——On the steamer *Lafayette* of the French line the American Red Cross has shipped 7,000 pounds of hospital supplies and clothing to the American Relief Clearing House in Paris for distribution.

Personal.—Drs. William E. Falconer, Walter J. Dodd and Varazstad H. Kazanjian, Boston, members of the Harvard unit, have been mentioned in despatches by Field Marshal Sir John French, commander of the British forces.——Dr. Allen Greenwood, Boston, a member of the Harvard unit, has returned from France.——Dr. Edward W. Ryan of the American Red Cross has arrived in Rome after a trip to Montenegro and Albania.——Drs. Edward Stewart, Boston, and G. F. Laughlin, Boise, Ida., and Dr. Bates, have arrived in Saloniki to take up the Serbian relief work.——Dr. E. Magoon, Dorchester, Mass., has been sent to investigate conditions among the Serbian refugees and Austrian prisoners in Durazzo and Elbassan, Albania.——Dr. Elliott Gage, Boston, has been sent to Scutari, Albania, and Dr. George W. Bateman, Massachusetts, to Montenegro to look into the needs of the people in behalf of the American Red Cross.

War Relief Supplies Shipped.—A number of heavy shipments of war relief supplies for France, Montenegro, and Belgium have been made by the American Red Cross in the last few days. The Transatlantique steamer *La Touraine* has carried 9,000 pounds of supplies and equipment to the American Relief Clearing House, Paris, and 680 pounds of convalescent garments, bandages and socks to the Belgian Red Cross at Calais. On the *Rochambeau* of the same line there have been shipped 21,722 pounds of hospital supplies and women's and children's clothing designated for use in France for distribution by the American Relief Clearing House. The same steamer carried 1,200 pounds of hospital supplies.——Hospital garments, anesthetics, bandages and other relief supplies amounting to 10,248 pounds are en route to Naples to be forwarded to the Montenegrin Red Cross at Cettinje.

LONDON LETTER

London, Jan. 6, 1916.

The War

THE BRITISH HOSPITAL UNITS IN SERBIA

In previous letters the good work done by the British and American hospital units in Serbia in the treatment of the sick and wounded, and above all in the extinguishing of the epidemic of typhus which ravaged the country, has been described. Now its heroic people have been overtaken by a catastrophe comparable to that of Belgium, and the British hospital units have with some of the survivors undergone the hardships of flight through the mountains of Albania and Montenegro, or been made prisoners by the invaders. The number of British physicians and nurses who have succumbed to disease in the country is not accurately known, but it seems to be between twenty-five and thirty. It was the intention of the Serbian government when the war was over to disinter each of them from their present place of burial, to collect them in one spot, and build over them a national monument on which Serbia's gratitude should be inscribed. This is a task which will probably be performed when the time comes. When Serbia succumbed to the last invasion, the hospitals fell back with the retreating army, but not until they had been under heavy fire. Some physicians, however, continued to tend the wounded until they fell into the enemy's hands. Among these is Mr. James Berry, the well-known London surgeon.

THE INCREASED COST OF DRUGS

Commodities in general have advanced in price as a result of the war. But drugs easily head the list in the magnitude of the advance, especially the synthetic products for which we are dependent on Germany. In most cases the advance during the first five months was much less than during the past year. The accompanying table shows the manner in which some of the principal drugs have been affected.

CHANGE IN PRICES OF DRUGS

Drugs	Prices Immediately Before the War Per Pound	Prices Jan. 1, 1915 Per Pound	Approximate Present Prices Per Pound
Acetanilid	$ 0.20	$ 0.50	$ 2.00
Acetylsalicylic acid	.50	1.50	12.00
Atropin	6.00*	20.00*	33.00*
Caffein	4.00	4.50	12.50
Calomel	.50	1.00	1.50
Phenol (carbolic acid)	.09	.30	.48
Cocain hydrochlorid	1.00*	2.00*	3.50*
Cod liver oil	18.00†	25.00†	67.00†
Mercuric chlorid	.50	1.50	2.00
Hexamethylenamin	.48	1.00	1.50
Hydroquinon	.50	2.00	9.00
Ipecacuanha	2.00	4.00	6.00
Morphin hydrochlorid	2.00*	3.00*	3.00*
Opium (Turkish)	4.50	7.00	9.50
Phenacetin	.50	1.50	15.00
Antipyrin	1.50	2.00	18.00
Potassium chlorate	.08	.24	.36
Potassium bromid	.37	.78	3.50
Quinin sulphate	.50	1.50	17.50
Santonin	30.00	$5.00	40.00
Sodium salicylate	.30	1.00	5.50

* Per ounce.
† Per barrel.

THE ROYAL COLLEGE OF SURGEONS AND THE WAR

In a previous letter, the effect of the war on the Royal College of Surgeons was instanced as an example of the manner in which the war is permeating our national life. The following particulars, however, may be of interest: The president (Sir Watson Cheyne, Bt., C.B.), who holds the rank of surgeon-general in the Royal Navy, was away from the June meeting, and leave of absence was given to Sir George Makins, K.C.M.G., Sir Anthony Bowlby, Sir Berkeley Moynihan, and Mr. F. F. Burghard, in France and to Mr. C. J. Symonds. Mr. R. H. Burne, physiologic curator of the museum, is working at Dunkirk, under the French Red Cross, and a large proportion of the servants of the college have enlisted. The obituary of fellows includes thirty-three names, three of whom lost their lives in the war, and the obituary of members includes 385 names, thirty-three of whom died in the war, while of the twenty-one licentiates in dental surgery, one died at the war.

A Child Poisoned by Potassium Chlorate

Cases of poisoning by potassium chlorate are so rare that many physicians are not aware that the drug is a poison. A case has just occurred in which the infant son of a physician died as the result of administration of the drug in his food under the impression that it was lactose. Owing to some

mistake the druggist supplied the drug in response to the order for lactose. Of course the quantity which would be administered in place of the usual doses of lactose given as a food to infants would be high for that age. Potassium chlorate has been mistaken for Rochelle salt and other substances, but it does not appear to have previously been mistaken for lactose.

Dutch Honor to Sir David Bruce

The Dutch Academy has conferred on Sir David Bruce the Leeuwenhoek Medal in consideration of his research work into the causes of sleeping sickness and Malta fever. Writing to him on the subject, the president, Professor Lorenz, said:

"Allow me to congratulate you most heartily on the occasion of the Leeuwenhoek Medal having been awarded to you, or rather, allow me to say that I consider it a great privilege for our Academy of Sciences to have been able to recognize in this way the high importance of your researches, and the great value of the results you have achieved. I may add, perhaps, that Leeuwenhoek, the great investigator, whose memory we honor by this medal, had close relations with your country. He was a foreign member of the Royal Society, and the greater part of his discoveries have been first published in the *Philosophical Transactions*. It is peculiarly gratifying to me that the medal has now been awarded to a member of the great society in which Leeuwenhoek found a lively interest for his discoveries."

The award is made every ten years, and this is the first made to a British scientist, the previous laureates being Ehrenberg (1875), Ferdinand Cohn (1885), Louis Pasteur (1895) and Beyerinck (1905).

PARIS LETTER

PARIS, Jan. 6, 1916.

The War

HYGIENE IN THE TRENCHES

Recently the Académie de médecine appointed a committee on the hygiene of our soldiers in the field and in particular the prophylaxis of preventable diseases and the means of guarding the soldiers against the local effects of cold. The following is the text of a circular which the academy, on the recommendation of Professor Letulle, has approved and the circulation of which is recommended:

"Now that the winter is here the soldier should know how to protect himself against the local effects produced or favored by cold. The conditions called 'freezing' ordinarily affect the feet. They sometimes have serious consequences and even produce infirmities. They may often be avoided by care of the feet and shoes. Intense and prolonged cold is in itself sufficient to produce freezing. The conditions mentioned, however, frequently manifest themselves with a very moderately low temperature, sometimes not lower than 0 C. (32 F.). In the trenches various causes cooperate with cold. These causes are: remaining motionless in water, liquid mud or melting snow; continual dampness of the shoes; shrinking of the leather and consequent compression of the foot, and interference with circulation producing swelling of the foot and of the lower part of the leg. It is possible to protect oneself against these various conditions.

"1. In the Trenches.—Do your best to keep the bottom of the trench dry by means of drains, cesspools, or broken stone, timber or brush. Prolonged immobility, whether standing or sitting, invites circulatory troubles and renders freezing easy. Move as often as possible therefore. Carefully grease the foot and shoe. Tallow alone or mixed with neatsfoot oil is suitable for this purpose. The shoes should be large so that the foot may always be comfortable in them. It is well to wear two pairs of socks or to wrap the foot with paper bands over which the sock may be placed; but care should be taken that the foot is not compressed, for if the shoe presses on it or the foot begins to swell the resulting compression will be more dangerous than the cold. Garters and leggings ought not to be too tight. A dry pair of socks should always be kept for change. To prevent stagnation of the circulation which invites freezing, observe the following most important regulation: Take off your shoe for a time at least once a day. Rub the foot and the lower part of the leg for ten minutes. Alternately bend the toes and the foot forward and backward with repeated energetic movements. Then put on dry socks. Thus your chances of avoiding frozen feet will be greatly improved.

"2. In Cantonment.—Use your leisure to take care of feet and shoes. Keep the feet clean and comfortable. Rub them once a day. Clean your shoes of mud, dry them as well as you can without exposing them too much to the heat of the fire, which hardens them. Carefully grease the leather to render it pliable and less permeable to water. Wash your socks to have them clean and dry when they may be needed. If you are afraid that your feet have been frozen, do not bring them too near a fire suddenly. Serious results are sometimes due to this. Remove your shoes, rub your feet gently, put on sabots with straw in them and go to the doctor for treatment."

ABDOMINAL WOUNDS IN WAR SURGERY

Abdominal surgery continues to be a subject of discussion in our professional societies. At a recent session of the Société de chirurgie de Paris, Dr. Rochard, surgeon of the hospitals, in connection with statistics of eighty-four penetrating abdominal wounds reported to the society by Dr. Stern, reviewed all the cases of operative and nonoperative treatment of wounds of this class which have been reported to the society since the beginning of the war and drew the conclusion that laparotomy is the only treatment applicable either to wounds of war or to wounds of civilian life. It gives a mortality of 60 per cent. while nonoperative treatment gives 80 per cent.

The seriousness of the prognosis is in direct relation to the number of organs affected. The mortality is considerably higher in abdominal wounds which affect other regions than in exclusively abdominal wounds. Among exclusively abdominal wounds those affecting the viscera are more serious than simple penetrating wounds. Those which affect several viscera are more serious than those which affect only one organ. With regard to the organ which is injured the most serious wounds are those of the spleen; the most benign are those of the liver. Between the two are wounds of the intestine.

Generally speaking, the following conditions contribute toward an unfavorable prognosis: preoperative and postoperative agitation, nervousness, nonextraction of the projectile: Rupture of the intestine is more serious than section because of the copious outflow of intestinal liquid. Section is more serious than a laceration which, however, is more serious than a perforation. On the other hand, a favorable outcome may be hoped for when the patient is in a satisfactory condition on the fifth day: Observation shows that the greater number of deaths occur before this date. Death may occur later, on the tenth day, for instance, and therefore one should not regard patients as cured until their cases have been followed at least fifteen days and appear to be progressing favorably at that time.

THE PHYSICIAN'S DECISION WITH REGARD TO OPERATION

The secretary of war was asked if a soldier in active service who has contracted a hernia in the performance of his duty is entitled to demand operation in the interests of the service. He replied that the decision as to the propriety of operation rested entirely with the physician.

DEATH OF AN AMERICAN AMBULANCE ATTENDANT

The American ambulance committee has been informed that one of the volunteers, M. Richard Nelville Hall, attached to the section of the American ambulance attending the French army in Alsace, was killed in the performance of his duty. Mr. Hall was 21 years old and the son of Prof. H. G. Hall of the University of Michigan. He was struck by a German shell as he was standing beside his ambulance. Another member of the staff of the American ambulance, Mr. L. C. Doyle, was slightly wounded.

THE RETURN OF THE FRENCH MEDICAL MISSION FROM SERBIA

News was recently received at Tunis from the French medical mission in Serbia. After having struggled against a serious epidemic of typhus which caused great ravages, the mission shared the lot of our Serbian allies during their retreat. Since its work is now suspended its physician in chief, Colonel Jaubert, has been ordered to return with his staff. The mission was on Albanian territory at last accounts.

TREATMENT OF TETANUS

At the Réunion médico-chirurgicale de la VI-e armée, Dr. L. de Montille reported excellent results in tetanus, even very acute cases, from Baccelli's method as modified by himself. He employs the following formula:

Phenol ..... 1 gm.
Ether enough to dissolve it.
Sterilized olive oil 10 gm.

This mixture is safer than phenol but just as efficacious. The size of the dose may be diminished and no more than one or two injections need be given a day in the muscular masses. More than 1.5 gm. phenol may be safely given a

day by this method, but doses one-sixth that size are effective. The advantages of the method thus modified are: (1) the great rapidity with which the patient becomes quiet (detetanized); (2) the simplicity of the treatment (one or two injections a day); (3) the activity obtained from a very small dose (the recommended injection of 2 c.c. represents 0.2 gm. phenol in twenty-four hours, and at the end of a few days the injection may be reduced to 1.5 c.c. or 1.3 c.c.); (4) the real and permanent recovery which rapidly becomes manifest (not more than ten or twelve days after beginning the treatment in serious cases).

BERLIN LETTER

Berlin, Dec. 7, 1915.

Personal

Professor Dohrn, for many years director of the gynecologic clinic of the Königsberg University, died in Dresden, December 5, aged 79 years. He had been a pupil of Professor Lietzmann of Kiel and Professor Credé of Leipzig. When he was only 27 years of age he was appointed ordinary professor in the gynecologic clinic at Marburg. Twenty years later, in 1883, he was called to Königsberg and remained there until 1897, when he resigned his position and went to Dresden. He was an ardent research worker and writer. Of special note are his contributions to operative gynecology and puerperal fever. His efforts did much to further antisepsis in obstetrics. He also did much to elevate the standing of the midwife. In 1892 the government persuaded him to assume the editorship of the new edition of the Prussian textbook for midwives. Although an exceedingly busy man in his professional work, he always found time to devote to medical societies. For many years he was chairman of the East Prussian medical society.

December 1, Professor Korach, the director of the division of internal medicine in the city hospital of Posen, died at the age of 62 years.

Professor Schittenhelm, director of the Königsberg University medical clinic, has accepted the call to take the place of the late Professor Lüthje of Kiel.

Prophylactic Vaccination Against Typhoid and Cholera

At a meeting held in the Kaiser Wilhelm Institute, November 16, Professor von Wassermann discussed this problem, basing his statements on his experimental research. He found that white mice were immune to typhoid infection by way of the bowel and that the blood of these mice killed the typhoid bacillus. He assumed, therefore, that there was some relationship between this immunity of the intestinal mucosa and bactericidal substances in the blood. This assumption was confirmed by experimental observation. By injecting an aqueous solution of chemical substances obtained from the body of the typhoid bacillus under the skin of a mouse, Wassermann succeeded in reducing the bactericidal protective substances or antibodies in the blood, at the same time removing the resistance to the passage of the bacillus through the intestinal epithelium. Therefore, if the reduction in the amount of antibodies in the blood produced such an effect on the intestinal epithelium, Wassermann concluded that by increasing the antibodies in the blood the intestinal epithelium would be less freely penetrated by the typhoid bacillus. If this could be done in the case of the mouse, the same thing was possible in man. The entrance of bacteria into the body always lowers the amount of antibodies in the blood and increases the possibility of producing that particular disease. Hence, in addition to protective or prophylactic vaccination, other hygienic measures must be instituted.

Inspection of Prison Camps

It is to be desired that the visitation of prison camps in Russia and Germany by the Red Cross sisters, and the discussions of the Red Cross conference in Stockholm will dispel the feeling heretofore existing as to the treatment accorded prisoners of war in these two countries. It has been stated officially that the Russian sisters and the three members of the Danish Red Cross, who have been active in Germany, have completed their work and gone on to Copenhagen. Every opportunity was given these visitors to inspect the prison camps and the methods of treatment of the prisoners. They have freely expressed satisfaction over the building of these camps, and the housing and care of the prisoners, and particularly have they commended the hygienic precautions taken. They complimented the hospitals in which prisoners of war received the same care and treatment as do German soldiers. The members of this commission petitioned the authorities to increase the bread ration and other foods, but, because of conditions existing throughout Germany necessitating the exercise of great care in the use of food products, the suggestions made in the petition could not be met. At the conference in Stockholm, various points were discussed as to the feeding and hygienic care of prisoners, and a definite plan of action was worked out which, it was hoped, would serve as a guide for the general treatment of prisoners of war everywhere. It is said that special committees are to be appointed in Siberia with headquarters in six of the principal cities, and that all of the prison camps are to be kept under continuous observation. Prince Karl of Sweden, who presided at the conference, suggested the appointment of a special commission, consisting of representatives of neutral countries as well as of the countries now at war, to visit the prison camps and report its findings.

Age Statistics of Prussia

Much has been written and many conclusions have been drawn as to the changes taking place in the average age of the population. This has been largely due to the confusion of average age and average duration of life, and the determination of the average age on the basis of the average duration of life. Statistics show definitely that this is wrong. The layman, however, has held to the belief that it suffices to determine the average age of the population for economic purposes. In order to arrive at a definite conclusion and settlement of this much disputed question, the government ordered an investigation based on the censuses of 1875, 1890, 1900 and 1910. The research was made along very definite lines so that the years of life of every age class were obtained, and by multiplying these by the population figures, fairly reliable statistics were obtained. The results for Prussia are given in the accompanying table.

AVERAGE AGES IN PRUSSIA

Year	Population	Total Years of Life	Average
MALES			
1875	12,686,212	332,179,900	26.18
1890	14,721,353	384,715,390	26.13
1900	16,990,231	443,683,564	26.11
1910	19,870,103	524,238,547	26.38
FEMALES			
1875	13,044,682	350,607,563	26.88
1890	15,270,470	415,373,950	27.20
1900	17,519,650	476,811,120	27.22
1910	20,337,721	559,756,370	27.52

These figures show that there are not only more females than males, but that the females also are older and have more rapidly been becoming so; that is, the increase in the average has been much more rapid for the woman than for the man. In 1875, the woman was 0.7 year older than the man; in 1890, these figures rose to 1.07; in 1900 to 1.11, and in 1910 to 1.14. On the whole, the total population has grown slightly older; that is, the average age has increased. In the case of men it has grown from 26.18 in 1875 to 26.38 in 1910, and in the case of women it has grown from 26.88 in 1875 to 27.52 in 1910.

Marriages

Donald Gardner Russell, M.D., New Haven, Conn., to Miss Eugenia Lyons of San Diego, Calif., at Huntington, W. Va., January 1.

Joseph T. Murphy, M.D., Tremont, Pa., to Miss Sara Morris of Wilkes-Barre, Pa., at Galveston, Tex., January 12.

Herman Carey Bumpus, Jr., M.D., Rochester, Minn., to Miss Helen McBurnie of Winona, Minn., December 29.

Harry Lester Baum, M.D., Denver, to Miss Martha Belle Shumate of Memphis, Tenn., at Denver, December 14.

Bush Leslie Burns, M.D., Two Harbors, Minn., to Miss Ruth Garnich of Ashland, Wis., December 29.

Harry P. Bowen, M.D., Johnson Creek, Wis., to Miss Florence F. Imig, at Milwaukee, January 4.

Charles F. McNevin, M.D., to Mrs. Abbie Warner Jones, both of St. Paul, at Los Angeles, January 3.

James Frank Jolley, M.D., Mexico, Mo., to Miss Lola Yark of Mattoon, Ill., January 2.

James Riddle Goffe, M.D., to Miss Alice Lansing Atocha, both of New York City, recently.

Deaths

Edward Hutchins Webster, M.D. Northwestern University Medical School, Chicago, 1877; aged 64; a Fellow of the American Medical Association; for nearly thirty-five years a practitioner of Evanston, Ill.; division surgeon of the Chicago and Northwestern System and physician to the Evanston Emergency Hospital; died at the home of his daughter in Hubbard Woods, Ill., January 3, from acute gastritis. The name of Dr. Webster is inseparable from the history of Evanston where he practiced for so many years. On January 3, 1912, a medical science room in the Evanston Public Library was formally opened and presented to the library by the donor. This room was founded in honor of Dr. Edward H. Webster and the opening exercises were a unique tribute of affection and respect paid to a man still living. Dr. Webster's sterling worth and lovable eccentricities and characteristics combined to make him the best loved citizen of Evanston.

Henry Genet Taylor, M.D. University of Pennsylvania, Philadelphia, 1860; aged 78; a Fellow of the American Medical Association and president of the Medical Society of New Jersey in 1889; one of the most prominent practitioners of Camden, N. J.; assistant surgeon of the Eighth New Jersey Infantry, U. S. V., and surgeon of the Artillery Brigade, Third Corps, Army of the Potomac, during the Civil War; major surgeon of the Sixth Infantry, N. J. N. G., from 1869 to 1882, and brigade surgeon during the strike of 1887; medical director and secretary of the medical staff of the Cooper Hospital, Camden; member and secretary of the board of managers of the Camden City Dispensary, and physician-in-chief to the Camden Home for Friendless Children; died at his home in Camden, January 14, from influenza.

Henry Eastman, M.D. Jefferson Medical College, 1892; aged 45; a Fellow of the American Medical Association and a well known oculist of Pittsburgh; a member of the American Academy of Ophthalmology and Oto-Laryngology; surgeon to the P. V. and C. Railroad and oculist and aurist to the Wheeling and Lake Erie and Wabash Pittsburgh Terminal Systems; ophthalmologist to the Carnegie Steel Company and a member of the staff of the West Penn Hospital; formerly president of the South Brownsville Board of Health; died in the West Penn Hospital, Pittsburgh, January 7, from pneumonia.

Corwin Worth Cornell, M.D. Rush Medical College, 1871; aged 66; a Fellow of the American Medical Association; a charter member and for more than thirty years secretary-treasurer of the Marion County (Iowa) Medical Society; councilor for the seventh district; local surgeon at Knoxville for the Burlington System; died at his home in Knoxville, January 12, from angina pectoris. At a special meeting of the Marion County Medical Society, January 14, a committee was appointed to draft suitable resolutions regarding the death of this well-known and much loved member of the society.

Joseph Aloysius Mudd, M.D. University of Maryland, 1864; aged 73; a member of the Medical Society of the District of Columbia in 1865; about 1866 removed to St. Charles, Md., and later to Hyattsville, Md.; licensed in the District of Columbia, Dec. 30, 1896; assistant surgeon in the Confederate Army and author of a book recording his war observations and experiences with Porter in northern Missouri; died at his home in Hyattsville, January 21, from acute dilatation of the heart.

Enoch Pearce, M.D. Jefferson Medical College, Philadelphia, 1854; aged 83; a Fellow of the American Medical Association; surgeon of the Sixty-First Ohio Infantry, U. S. V., during the Civil War and given the brevet rank of lieutenant colonel for "gallant and meritorious service"; a practitioner of Steubenville, Ohio, for sixty-one years; president of the Soldiers' and Sailors' Association of Jefferson County, Ohio; died at his home in Steubenville, January 13, from pneumonia.

Richard Sechrist Gaugler, M.D. Jefferson Medical College, 1894; aged 47; a member of the Ohio State Medical Association; formerly first assistant surgeon of the National Military Home of Ohio, Dayton; while returning from a professional call in Dayton, January 8, was struck by an automobile and instantly killed. At the funeral of Dr. Gaugler the active pallbearers were fellow members of the Montgomery County Medical Society and the society in a body attended the funeral.

Michael Frampton Patterson, M.D. Western Reserve University, Cleveland, 1881; aged 58; a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat; who practiced for several years in Des Moines where he was a member of the staff of Mercy Hospital and professor of diseases of the ear, nose and throat in the College of Physicians and Surgeons of Iowa; died at his home in Fonda, Iowa, January 13, from complications following influenza.

Charles Adna Smith, M.D. Rush Medical College, 1882; aged 59; a Fellow of the American Medical Association and American College of Surgeons; a specialist on surgery, of Texarkana, Texas; for twenty-eight years chief surgeon of the St. Louis Southwestern System and resident physician at Texarkana for the Missouri Pacific Railway; died at the St. Louis Southwestern Hospital, Texarkana, January 12, from nephritis.

Peter Hugo Ernst, M.D. New York University, New York City, 1886; aged 54; a Fellow of the American Medical Association; a well-known gynecologist of New York City; adjunct professor of gynecology in the New York Polyclinic Medical School; gynecologist to the De Witt Dispensary and assistant gynecologist to the New York Polyclinic Hospital; died at his home in New York City, January 9, from pneumonia.

Charles George Am Ende, M.D. Bellevue Hospital Medical College, 1890; aged 76; a Fellow of the American Medical Association and a member of the American Electrotherapeutic Association; for more than fifty years a practitioner of New York City; a member of the staff of the Policlinic, Bellevue and Post-Graduate hospitals and the West Side Dispensary; died at his home in New York City, January 14.

Meredith D. Jones, M.D. Jefferson Medical College, 1870; aged 67; a member of the Missouri State Medical Association; formerly a surgeon in the Navy; a resident of St. Louis since 1890; professor of otology and rhinology in Barnes Medical College, St. Louis, and emeritus professor of otology in the American Medical College; died in Chambersburg, Pa., January 11, from heart disease.

Jesse Lee Morrill, M.D. College of Physicians and Surgeons in the City of New York, 1869; aged 67; a Fellow of the American Medical Association and the New York Academy of Medicine and a member of the New York Obstetrical Society; a specialist in obstetrics; died at his home in New York City, January 16, after a nervous breakdown.

James Matthew Kiernan, M.D. University and Bellevue Hospital Medical College, 1908; aged 36; a Fellow of the American Medical Association; one of the best known of the younger practitioners of Bridgeport, Conn., and a member of the staff of the Bridgeport Emergency Hospital; died in his office in that city, December 28, from pneumonia.

W. A. Shands, M.D. Charleston (S. C.) Medical College, 1860; aged 76; a Confederate veteran; for two terms a member of the South Carolina Legislature from Laurens County; for eighteen years mayor of Clinton, S. C.; a member of the board of trustees of the Thornwell Orphanage; died in the Lesh Infirmary, Clinton, S. C., January 1.

Charles C. Grizzell, M.D. Missouri Medical College, St. Louis, 1889; aged 56; formerly a member of the Illinois State Medical Society and first vice president of the Southern Illinois Medical Association; of Murphysboro, Ill.; a specialist on diseases of the eye, ear, nose and throat; died at his home near Murphysboro, January 17.

Edward J. Collins, M.D. George Washington University, Washington, D. C., 1892; aged 66; a member of the Board of Eclectic Medical Examiners of the District of Columbia since 1897, during this time serving as secretary and as president of the board; died at his home in Washington, January 16, from endocarditis.

Charles Impey, M.D. University of Louisville, Ky., 1874; aged 63; a Fellow of the American Medical Association and a veteran practitioner of Omaha; surgeon to the Wise Memorial Hospital, Omaha; was seized with a cerebral hemorrhage January 10, while entering the hospital and died a few minutes later.

James Joseph Bowen, M.D. New York University, New York City, 1895, aged 40; formerly a member of the Medical Society of the State of New York; assistant surgeon to the Charity Nose and Thoat Hospital, Buffalo, and surgeon to St. Joseph's Hospital, Gardenville, N. Y.; died in Saranac Lake, N. Y., January 12.

Wellington S. Hopkins, M.D. Missouri Medical College, St. Louis, 1886; aged 53; a member of the Missouri State

Medical Society and for two terms president of the Greene County, (Mo.) Medical Society; a well known practitioner of Springfield; died in the Springfield Hospital, January 12, from pneumonia.

John Ashley, M.D. University of London, England, 1874; aged 62; a member of the Missouri State Medical Association and formerly a member of the State Board of Health; from 1882 to 1902 a clergyman of the Methodist Episcopal Church; died at his home in Bloomfield, Mo., January 3, from malignant disease.

Josiah Swett, M.D. University of Vermont, Burlington, 1878; aged 59; a Fellow of the American Medical Association; for many years coroner's physician for New Hartford and Barkhamsted, Conn.; president of the New Hartford Electric Light Company; died at his home, January 13, from pneumonia.

Holland W. Richardson, M.D. Eclectic Medical Institute, Cincinnati, 1860; Rush Medical College, 1862; Bellevue Hospital Medical College, 1870; aged 85; formerly a member of the Illinois State Medical Society; died at his home in Marengo, Ill., January 15, from pneumonia following influenza.

Thomas L. Craig, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1880; aged 75; for many years in the United States Indian Service with the Osage Indians in Oklahoma and also with the Navajo Indians; died at his home in Soledad, Calif., December 23, from the infirmities of age.

Charles H. Steele, M.D. New York University, New York City, 1874; aged 64; formerly professor of materia medica and therapeutics in Cooper Medical College, San Francisco, but for the last fifteen years a resident of Detroit; died in Harper Hospital, Detroit, January 16, from cerebral hemorrhage.

Edward Hasson, M.D. Rush Medical College, 1899; aged 39; a Fellow of the American Medical Association; formerly president of the Peoria City Medical Society; a member of the Proctor Hospital staff, Peoria; health commissioner of Peoria, Ill.; died in a hospital in Peoria, January 16.

Herman Beyer, M.D. Bellevue Hospital Medical College, 1869; aged 79; a veteran of the Civil War in which he served as hospital steward at Baltimore; until 1904 a practitioner of Stapleton, N. Y., and thereafter a practitioner of Oceano, Calif.; died recently at his home from senile debility.

Henry Chapeze Houston, M.D. Cleveland Homeopathic Medical College, 1877; aged 68; consulting physician to the Ohio Soldiers' and Sailors' Orphans' Home, Xenia, O.; director of the Citizens' National Bank of Urbana; died at his office in Urbana, O., January 8, from heart disease.

William John Teahan, M.D. College of Physicians and Surgeons in the City of New York, 1901; aged 36; a Fellow of the American Medical Association; for four years medical examiner for Hampden County, Mass.; died at his home in Holyoke, Mass., January 11, from pneumonia.

William Kelly Fletcher, M.D. Harvard Medical School, 1862; aged 88; assistant surgeon of volunteers throughout the Civil War; for many years a practitioner of Somerville and Cambridge, Mass.; died at the Home for the Aged in Somerville, January 13, from cerebral hemorrhage.

Andrew B. Mitchell, M.D. University of Maryland, 1866; aged 75; after practicing in New Jersey and West Virginia, he settled in the District of Columbia where he was licensed Dec. 30, 1896; died at the Home for Incurables, Washington, D. C., January 20, from myocarditis.

Benjamin Franklin Gibbs, M.D. Hahnemann Medical College of Philadelphia, 1885; aged 57; one of the founders of the Northern Dispensary and Emergency Hospital, Washington; died at his home in Washington, January 15, from chronic parenchymatous nephritis.

William Barry Burnell, M.D. George Washington University, Washington D. C., 1906; aged 34; formerly a city official of Norwalk, Conn., and a member of the staff of the Norwalk Hospital; died in the Westport, Conn., Sanitarium, January 13, from heart disease.

David Walter Welch, M.D. Hospital Medical College of Evansville, Ind., 1886; aged 67; a member of the Indiana State Medical Association; an ardent good-roads advocate of Posey County, Ind.; died at his home in Mt. Vernon, Ind., January 11, from pneumonia.

Alvin Scott Storey, M.D. Western Reserve University, Cleveland, 1902; aged 38; a Fellow of the American Medical Association; roentgenologist to the City and Lutheran hospitals, Cleveland; died at his home in that city, January 11, from pneumonia.

Gordon Percival Spencer, M.D. Bellevue Hospital Medical College, 1887; aged 56; a member of the Medical Society of the State of New York; died in his room in the Y. M. C. A. Building, Watertown, N. Y., January 6, from heart disease.

Elliott Calvin Smith, M.D. University of Buffalo, 1882; aged 56; a member of the Medical Society of the State of New York; for thirty-four years a resident of Corfu, N. Y.; and health officer of that place; died at his home, January 8.

Walter Louis Woerner, M.D. Hahnemann Medical College, Philadelphia, 1912; aged 25; of Lititz, Pa.; a specialist on diseases of the eye, ear, nose and throat; died in St. Joseph's Hospital, Lancaster, Pa., January 7, from pneumonia.

John Marshall Barkley, M.D. Rush Medical College, 1873; aged 72; a member of the Ohio State Medical Association; a veteran of the Civil War; local surgeon for the Big Four System at Riverside, Cincinnati; died at his home, January 6.

Charles N. Crawford, M.D. University of Louisville, 1884; aged 57; a member of the Kentucky State Medical Association; superintendent of the Milling Company of Lynn Grove and Murray, Ky.; died at his home in Lynn Grove, January 3.

Edwin Briggs Wheeler, M.D. Bellevue Hospital Medical College, 1873; aged 64; a Fellow of the American Medical Association; for more than forty years a practitioner of Philadelphia; died at his home in that city, January 11.

James Bailey Doan, M.D. Memphis Hospital Medical College, 1901; aged 37; a member of the Medical Association of the State of Alabama; formerly of Leighton, Ala.; died at Altus, Okla., in December, from an overdose of a drug.

Hal Hall, M.D. Barnes Medical College, St. Louis, 1899; aged 42; assistant surgeon to the Cook Hospital, Fairmont, W. Va.; died at his home in Fairmont, W. Va., January 3, from septicemia, the result of a carbuncle of the neck.

John Evan Jenkins, M.D. University of Southern California, Los Angeles, 1903; aged 36; a Fellow of the American Medical Association and a specialist in surgery; died at his home in Los Angeles, January 8, from gastric ulcer.

Marvin Lawrence Garvin, M.D. Hospital College of Medicine, Louisville, 1900; aged 37; of Horse Cave, Ky.; a member of the Kentucky State Medical Association; died recently after an operation for abscess of the liver.

Robert T. Neffner, M.D. Medical College of Ohio, Cincinnati, 1902; aged 37; a member of the Indiana State Medical Association; of Wiseburg, Ind.; was drowned while attempting to ford East Tanners Creek, January 11.

James Tweddale, M.D. Rush Medical College, 1869; aged 83; a Fellow of the American Medical Association and a widely known and honored practitioner of Woodford County, Ill.; died at his home in Washburn, January 8.

Abner H. Andrus, M.D. Starling Medical College, Columbus, O., 1886; aged 53; formerly of Gary, Ind., but for the last year a practitioner of Markesan, Wis.; died at his home in Markesan, January 10, from acute gastritis.

Mayes Smith Davis, M.D. Rush Medical College, 1882; Bellevue Hospital Medical College, 1896; aged 55; a member of the Medical Society of the State of Pennsylvania; died at his home in Pittsburgh, recently.

Edward Albert Louis Francois, M.D. Harvard Medical School, 1866; a veteran of the Civil War and for forty-three years a practitioner of Saugus, Mass.; died in the Soldiers' Home, Chelsea, Mass., January 11.

Judson D. Burns, M.D. Eclectic Medical Institute, Cincinnati, 1870; aged 67; a member of the insane commission of Grundy County, Ia.; died at his home in Grundy Center, Ia., about January 7, from pneumonia.

John R. Munford, M.D. College of Physicians and Surgeons, Chicago, 1889; aged 56; a Fellow of the American Medical Association; died at his home in Pittsburgh, about January 18, from pneumonia.

Leo Reyfowitz Nathan, M.D. New York University, New York City, 1889; aged 61; also a graduate of the College of Pharmacy of the City of New York; died at his home in New York City, January 10.

William Herman Kluge, M.D. University of Breslau, Germany, 1893; aged 42; died at his home in Indianapolis, January 5.

W. J. Williams, M.D. Atlanta (Ga.) Medical College, 1887; died at his home in Ellabell, Ga., January 2.

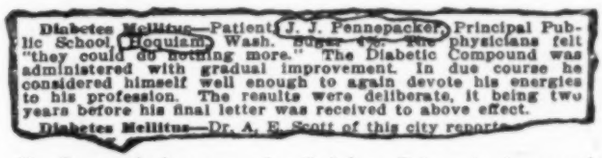
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

FULTON'S COMPOUNDS

Nostrums for Bright's Disease and Diabetes

THE JOURNAL has just received a letter from Dr. J. B. Kinne of Aberdeen, Wash. With the letter was enclosed an advertising sheet ("Bulletin 31, November, 1915") sent out by the John J. Fulton Company of San Francisco which



Diabetes Mellitus—Patient J. J. Pennepacker, Principal Public School, Hoquiam, Wash. Duration 4½ years. Five physicians felt "they could do nothing more." The Diabetic Compound was administered with gradual improvement. In due course he considered himself well enough to again devote his energies to his profession. The results were deliberate, it being two years before his final letter was received to above effect.

Diabetes Mellitus—Dr. A. E. Scott of this city reports

Mr. Pennepacker's case as described in a Fulton circular recently received.

exploits two nostrums "Fulton's Renal Compound" and "Fulton's Diabetic Compound." Dr. Kinne's letter reads:

> *"To the Editor:*—In today's mail I received the enclosed 'Bulletin.' The first column of the last page begins with the account of the results of treatment of a patient in a nearby town. In the columns of one local paper today I cut the inclosed clipping telling about the amputation of this man's leg for diabetes.
>
> "About one year ago I attended a patient here who had spent a large amount of money with this concern who told me about the above 'cure,' but my patient died later. It seems a terrible thing that this kind of matter is permitted to go through the mails."

The case referred to by Dr. Kinne was that of a Mr. J. J. Pennepacker whose case was reported by the Fulton concern as an instance of "cure" due to the use of "Diabetic Compound." The clipping that the doctor enclosed together with the item from the Fulton advertising leaflet are reproduced on this page.

The Fulton nostrums have been briefly referred to before in these pages. On Jan. 18, 1913, THE JOURNAL said:

> "Fulton's Diabetic Compound has not been examined in the Association Laboratory, but the so-called Renal Compound, put out by the same concern, has been examined. The latter was found to consist of some herbs, which were not identified, alcohol 5 per cent. and water. No alkaloids were found and the presence of heavy metals, iodids, bromids or acids could not be demonstrated."

The concern itself makes a pretense of giving the formulas of its two preparations. The "Renal Compound" has been said to be:

> "A combination of the desirable principles of Triticum [Couch-grass or Quick-grass], Chimaphila ["Bitter wintergreen"], Spiræa [Meadow-sweet] and other herbal agents carrying small quantities of Sodii Boras [Borax] and Sodii Nitras [Chili saltpeter], both of the latter in less than half the physiological doses."

Elsewhere the formula has been given as:

> "A combination of Triticum, Pelosine and other similar herbal diuretics to which have been added a small quantity of Sodii Boras and Sodii Nitras, both of the latter in less than half the physiological doses."

The "Diabetic Compound" is alleged to be:

> "A combination of the desirable principles of Chimaphila ["Bitter wintergreen"], Eupatorium [Boneset] Taraxacum [Dandelion] and other herbal diuretics and correctives carrying small quantities of Sodii Boras [Borax] and Sodii Nitras [Chili saltpeter] both of the latter in less than half the physiological doses."

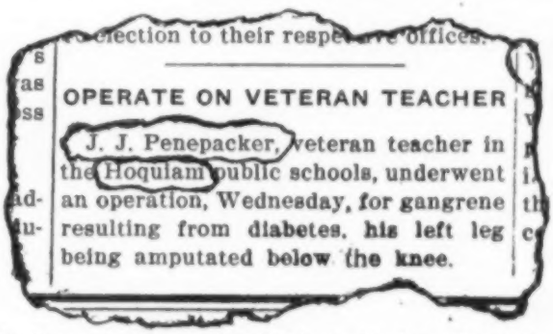
While this "information" fails to inform, it doubtless answers the purpose for which it is given. But whatever indefiniteness and ambiguousness characterize the statements regarding the composition of the nostrums is more than compensated for by the specific and positive claims made for their therapeutic action. To quote from the advertising:

> "Fulton's Renal Compound is the first progressive step in forty years in the treatment of kidney disease."
>
> "Call inflammation of the kidneys what you will, after it becomes chronic (which it commonly does in a few months) it is then incurable by anything known except Fulton's Renal Compound."
>
> "Bright's Disease and Diabetes are now positively curable in about 80 per cent. of all cases."
>
> "Fulton's Renal Compound is the only thing known that acts directly on the kidney tissues, reducing inflammation and thus reopening the tubules and kidney function."
>
> "Fulton's Renal Compound is the only specific in the known world for chronic Bright's Disease. . . ."
>
> "John J. Fulton was the first man in the world to reach the kidneys with an emollient."
>
> "Diabetes is rated the world over as incurable but recoveries are being reported daily through Fulton's Diabetic Compound."

Some time after the short article appeared in THE JOURNAL on the Fulton Compounds, the Propaganda Department started to investigate some of the alleged cures. Experience has shown that it is useless to expect to get accurate information regarding individuals who have recently written testimonials for any "patent medicines." It becomes necessary, especially in such diseases as are not quickly fatal, to allow some time to elapse before investigating the cases. For this reason a few of the old testimonials in our files were resurrected and letters were written to get what facts were available. Press of other matter prevented this particular investigation being followed up, although some material was collected and this we now give so as to make it a matter of record.

It should be understood that the quotations that are about to be given from the Fulton "literature" appeared in circulars issued between 1907 and 1911. Our investigation was commenced in the latter part of 1913.

CASE 1.—According to a Fulton advertising leaflet issued in 1908, W. H. Bell, a druggist of Live Oak, Fla., wrote the company in 1907 that "last June I was surprised to find my feet and legs swollen." Mr. Bell claimed he went to a physician who "found 50 per cent. of albumen and pronounced it Bright's disease." According to the Fulton leaflet he "con-



election to their respective offices.

OPERATE ON VETERAN TEACHER

J. J. Penepacker, veteran teacher in the Hoquiam public schools, underwent an operation, Wednesday, for gangrene resulting from diabetes, his left leg being amputated below the knee.

Mr. Pennepacker's case as described in the Aberdeen (Wash.) *Herald*, Jan. 14, 1916.

tinued to get worse" and "bloated" until he "could not lie down." About this time Mr. Bell "met a drummer by the name of Levi" who told him of Fulton's Compound. As a result Mr. Bell began to take the compound. In October, 1907, Mr. Bell again wrote the Fulton people: "I am 100 per cent. better than when I began. Am now on my 27th bottle." In commenting on this case the Fulton Company said: "How can people doubt the curability of chronic kidney disease in view of the constant stream of testimony we are presenting. Little wonder that Druggest Bell is now one of our valued and active agents."

Mr. Bell died of Bright's disease in June, 1908.

CASE 2.—Mr. D. C. McHorney of Portsmouth, Va., according to the Fulton advertising, "had been a sufferer for years with Bright's disease." Although he had been treated by physicians, one being "one of the most noted doctors in

Norfolk," he was not helped. In fact, "the last physician said that he could do nothing in my case, but said that I might linger a while longer." In April, 1907, Mr. McHorney began taking Fulton's Compound and in his letter written in September, 1907, and published by the Fulton Company he says that through the use of Fulton's Compound "and God's help"

PLACE OF DEATH
CITY OF PORTSMOUTH, VA.
(If death occurs away from USUAL RESIDENCE give facts called for under "Special information")

HEALTH DEPARTMENT, PORTSMOUTH, VA.
STANDARD CERTIFICATE OF DEATH

Permit No. ..... Registered No. 11

No. Cor. Wilson & Barron Street, etc. 5th Ward
(If death occurred in a Hospital or Institution give its name instead of street and number.)

Full Name David Cornelius McHorney

PERSONAL AND STATISTICAL PARTICULARS

Sex: Male | Color: White

Date of Birth: 1870

Age: 39 years ... months ... days

Single, Married, Widowed or Divorced: Married

Birthplace (State or Country): Va

Name of Father: Jessee McHorney

Birthplace of Father (State or Country):

Maiden Name of Mother: Emaline Hudgins

Birthplace of Mother (State or Country):

Occupation: Machinist

The above stated personal particulars are true to the best of my knowledge and belief

Informant ..... (Address) .....

Filed ..... 19.. J. P. Hope M.D. Health Officer

MEDICAL CERTIFICATE OF DEATH

Date of Death: Feby 3 (Month) (Day) 1909

I Hereby certify, that I attended deceased from ... 19.. to ... 19..

that I last saw h... alive on ... 19..

and that death occurred on the date stated above at ... m. The cause of death was as follows.

Interstitial Nephritis (Duration) 5 Days

Contributory ..... (Duration) ... Days

(Signed) Geo H. Carr M. D.

Feby 3 1909 (Address) Portsmouth Va.

SPECIAL INFORMATION only for Hospitals, Institutions, Transients or Recent Residents

Former or Usual Residence ..... How long at Place of Death ... days

Where was Disease contracted if not at place of death?

Place of Burial or Removal: Oak Grove Date of Burial ... 19..

Undertaker: Insley, Kay & Cofer Address: Portsmouth Va.

Miniature reproduction of the death certificate of D. C. McHorney. The Fulton Company referred to Mr. McHorney's case as a "nice recovery" from Bright's disease. (See Case 2 in the article.)

he is "a living man today." Continuing, he says: "I am like a new man. I am able to work every day, the pains have gone, my eyes are all right, I sleep soundly and have gone back to my natural size." The Fulton Company in publishing Mr. McHorney's testimonial commented: "Wonder if our esteemed Portsmouth agent, J. P. Carr, knows about this nice recovery to which he contributed."

The testimonial was circulated in 1908; Mr. McHorney's death certificate states that on Feb. 3, 1909, he died of "interstitial nephritis."

CASE 3.—In various Fulton publications the testimonial was given of W. R. Marquis of Bartow, Fla. According to these, Mr. Marquis had chronic Bright's disease and his case was "surely a hard one." Further, he had been given up by his physician and was in a deplorable condition, being unable to lie in bed, stand on his feet or walk. "This condition," according to the Fulton concern, "frequently develops in extreme cases of this disease and up to the discovery of this Compound it was absolutely hopeless." When Mr. Marquis' case "seemed most hopeless" he heard of Fulton's Compound and began taking it. After the fourth bottle "he began to get better." In June, 1907, he stated that he was "almost entirely well" and added: "I am candid in the belief that Fulton's Renal Compound is the only remedy in the world that could have saved me."

Mr. Marquis' testimonial was circulated in the Fulton "literature" during the period 1908-1912; Mr. Marquis died in July, 1912.

CASE 4.—Mort Gattrell of Ukiah, Calif., according to the Fulton concern, had diabetes. Fulton's Diabetic Compound was recommended and Mr. Gattrell took it. Later he is alleged to have written to the company saying he had taken "about 40 bottles" of the compound and: "I feel now that I am about well." Another Fulton circular reported: "Gattrell is well." The latest report on Mr. Gattrell apparently appeared in the Fulton "literature" in 1908 under the title: "A Pleasing Incident."

Mr. Gattrell died Nov. 12, 1909; his death certificate gives as the cause of death: "Uremic poisoning from chronic diabetes."

CASE 5.—If one is to believe the Fulton advertising—which is not to be advised—when Edward Zimmerman of Belle Plaine, Iowa, started on Fulton's Compound "he was in such a bad way that his physician said he would not live two weeks, and told his friends to watch him closely as he was liable to drop dead." After Zimmerman had taken thirty-one bottles of the compound he was, according to the letter published by the Fulton Company, so improved that he was "nearly ready to go to work" and was willing to have the company "refer any one to him."

Edward Zimmerman died Jan. 5, 1911; cause of death, according to the death certificate: "Diabetes Mellitus."

CASE 6.—Under the heading "This Work is Glorious" the Fulton Company describes the case of Arthur McIntyre of Flint, Mich. Mr. McIntyre, the public was advised, "was so bad with Bright's disease his friends gave up all hopes. He was put on the Renal Compound and is today well and in business." This statement appeared in a Fulton bulletin published about 1908.

A physician in Flint who knew of Mr. McIntyre's case, and wrote to us in January, 1914, said: "There was a Mr. McIntyre in Flint, Mich., who had Bright's disease and took many bottles of Fulton's Compound. Mr. McIntyre died three years ago."

In addition to the cases just described there were others the histories of which, while not so tragic, were equally damaging to the claims of the Fulton concern. For instance, there was the alleged case of Mr. S. of Iowa who despaired of ever getting well of Bright's disease but who after taking the "Renal Compound" is said to have "recovered completely." This was in 1908 or earlier. But investigation

CALIFORNIA STATE BOARD OF HEALTH
BUREAU OF VITAL STATISTICS
ORIGINAL CERTIFICATE OF DEATH
263 31
Local Registered No. 676

PLACE OF DEATH
County of Alameda
Township of Haywards
City of Oakland
(No)

Full Name James Mortimer Gattrell

PERSONAL AND STATISTICAL PARTICULARS

Length of Residence: In Place of Death 3 years ... months; In California 34 years ... months

Sex: Male | Color or Race: White

Date of Birth: ... (Month) (Day) 1 (Year)

Age: ... years ... months ... days

Single, Married, Widowed, or Divorced:

Birthplace: Ohio (State or Country)

Occupation: Butcher

Name of Father: Nicholas Gattrell

Birthplace of Father: Ohio

Maiden Name of Mother: Mary Ann

Birthplace of Mother: Ohio (State or Country)

THE ABOVE STATED PERSONAL PARTICULARS ARE TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF

(Informant) Mrs P Wilberts

(Address) Haywards

MEDICAL CERTIFICATE OF DEATH

Date of Death: Nov 12 (Month) (Day) 1909

I HEREBY CERTIFY that I attended deceased from Augt 12 1909 to Nov. 12 1909

that I last saw him alive on Nov 12 1909

and that death occurred, on the date stated above, at 4 P.M.

The CAUSE OF DEATH was as follows:

Uremic Poisoning From Chronic Diabetes (Duration) ... days

Contributory ... (Duration) ... days

(Signed) J. E. Alexander M.D.

Nov. 13 1909 (Address) Haywards Cal

SPECIAL INFORMATION ONLY FOR HOSPITALS, INSTITUTIONS, TRANSIENTS OR RECENT RESIDENTS

Former or Usual Residence ... How long at Place of Death ... days

Where was disease contracted, if not at place of death?

Place of Burial, or Removal: Lone Tree Date of Burial: Nov 14 1909

Undertaker: Peery & Grindell Address: Haywards

Nov 12 1909 J E Reynolds

Nov 18 1909 H. L. Grim Registrar of Deaths

Miniature reproduction of the death certificate of "Mort" (James Mortimer) Gattrell. A Fulton circular reported that after taking Fulton's Diabetic Compound "Gattrell is well." (See Case 4 in the article.)

showed that during the year 1913 Mr. S. was under treatment for Bright's disease.

Then there was the case of Mrs. P. of Florida, who according to the Fulton circular, was so ill with Bright's disease that she "could not turn over in bed." Use of the "compound" is alleged to have enabled her to do her own work again and get out to church. Investigation elicited the state-

ment from Mrs. P.'s family physician that the lady never had Bright's disease.

The case of Mr. D. of Oregon was described in the 1908 Fulton leaflets. D. had diabetes and was "almost in" but took thirty bottles of Fulton's Compound with the result—alleged—that he was "feeling fine." A physician in the town in which Mr. D. lived informs us that he does not believe the man ever recovered from the disease. Certain it is he died in 1912 of pulmonary tuberculosis, a common sequel to diabetes.

Mr. W. of Illinois suffered, according to a 1908 Fulton bulletin, from what "specialists" had called Bright's disease. After taking one dozen bottles of the Compound he was reported as "almost cured." A physician who knew of W.'s case wrote in October, 1913, that Mr. W. never had Bright's disease, but that he had "been troubled at times with a backache" and was "still the same."

In 1908 Mr. C. wrote to the Fulton Company which promptly published the letter. He was taking the "Renal Compound" he wrote, and was convinced that it would "effect a cure." The facts are Mr. C., about this time, went to a physician who made a thorough examination of his case. The doctor wrote us that C. had no symptoms of Bright's disease and, when advised of that fact, "seemed really disappointed."

The case of Rev. B. of Ohio was brought to the attention of the public in the Fulton bulletin in 1907. A druggist wrote urging those who wished to hear from a person who had "received great benefit" to write to Rev. B. The physician to whom we wrote in 1913 replied that Rev. B. died suddenly of "heart disease" in 1912. The doctor added "he did not have Bright's disease."

Mr. W. of Texas, whose letter was published in 1907 by the Fulton Company, claimed the doctor had told him he had Bright's disease and he was in bed four months. Then he sent for a dozen bottles of "Fulton's Compound" and after taking these, and two dozen more, declared he was "pronounced sound" and "in fine health." The physician to whom we wrote in 1913 declared that Mr. W. had an acute nephritis from which he recovered *before* he began taking Fulton's Compound—about the time he became an agent for the preparation.

STATE OF IOWA—Department of Vital Statistics

CERTIFICATE OF DEATH

1. County of Benton
2. Township
3. City or Town of Belle Plaine
4. FULL NAME Edward Zimmerman
5. SEX Male
6. COLOR White
7. DATE OF BIRTH Oct. 1 1862
8. Age 48 Years 3 Months 6 Days
9. SINGLE, MARRIED, WIDOWED OR DIVORCED Married
10. BIRTHPLACE (State or Country) Pa.
11. NAME OF FATHER Daniel Zimmerman
12. BIRTHPLACE OF FATHER (State or Country) Pa.
13. MAIDEN NAME OF MOTHER Mariann Bunts
14. BIRTHPLACE OF MOTHER (State or Country) Pa.
15. OCCUPATION R. R. Engineer

The above stated personal particulars are true to the best of my knowledge and belief.

16. Informant Mrs. E. Zimmerman
(Address) Belle Plaine, Ia.

17. DATE OF DEATH Jan. 8 1911
I HEREBY CERTIFY, That I attended deceased from July 1, 1910 to Jan.8,1911
that I last saw h.. alive on Jan.8,1911
and that death occurred, on the date stated above, at 9 o'clock P. M.

18. The CAUSE OF DEATH was as follows: Diabetes Mellitus. Disease extended over a period of about 8 years.
Duration ... Days
Contributory
Duration ... Days

19. Signed Jno. A. Williams M. D.
Jan.10,1911 (Address) Belle Plaine, Ia.

20. SPECIAL INFORMATION only for Hospitals, Institutions, Transients or Recent Residents.
Former or Usual Residence
How long in Place of Death ... Days
Where was disease contracted, if not at place of death?

21. PLACE of BURIAL or REMOVAL Oak Hill Cemetery
22. Date of Burial Jan.6,1911
23. UNDERTAKER Louis Grossman
24. ADDRESS Belle Plaine, Ia.

CERTIFIED COPY OF CERTIFICATE OF DEATH

I HEREBY CERTIFY that I am Secretary of the Iowa State Board of Health and as such Secretary am State Registrar of Vital Statistics. I further certify that as said Registrar I am the legal recipient of the original certificate of death returned under Chapter 111, Laws of the Thirty-first General Assembly.

I further certify that the foregoing certificate of death of Edward Zimmerman is a true and correct copy of the original on file in this office.

Witness my hand and seal hereunto attached this 24th day of April 14.

Clifford L. Sumner
Secretary

(SEAL)

By Carl E. Mueller
Assistant State Registrar

Miniature reproduction of the death certificate of Edward Zimmerman (Case 5 in the article). Mr. Zimmerman's case was advertised in the Fulton bulletin. We have been unable to find any reference in the Fulton advertising to the outcome of the Zimmerman case.

In short, the investigation, incomplete though it was, revealed just what might have been expected. The diabetic frequently drags along for years—especially if he is at all careful in his manner of living, and he is likely to be. The fluctuations of the disease make it a fertile field for the quack and the "patent medicine" maker. Chronic kidney disease offers similar attractions to those who prey on the sick. Nothing is much easier to get than testimonials in such cases—testimonials whose genuineness is as unimpeachable as their value is negligible.

On a foundation of misrepresentation, fraud and deceit is reared the stupendous superstructure of the "patent medicine" business—a trade whose millions corrupt legislatures, prostitute no small portion of the press and are a standing menace to the public health. Some day an enlightened public opinion will demand the destruction of this evil—and the dawn of that day is not far off.

Correspondence

The "Autolysin" Advertising

To the Editor:—Enclosed is a little booklet I received today from the Goodhue Publishing Co., of New York, exploiting the Horowitz-Beebe cure-all for cancer, which, were it not for certain obvious serious features, would make humorous reading.

What psychologic explanation can be made of the fact that there are always sufficient numbers of suckers to make such pseudoscientific adventures profitable?

H. C. DODGE, M.D., Steamboat Springs, Colo.

To the Editor:—In my professional life I have been flooded with the usual number of insults to intelligence both by mail and by the softspoken detail man. As a result, I have no doubt, of the active propaganda for reform carried on by THE JOURNAL, these insults have lost a certain quality of "rawness" and become much more cleverly done.

One of these has just been perpetrated on the profession which will probably hold the championship pennant for 1916, although I admit that it is early in the year to begin prophecy. A very modestly bound, well printed volume comes to my desk with the compliments of the publishers. At the end of the volume is a group of highly ethical advertisements of other books of the author. So far so good. The last four pages, however, contain the advertisement of a forthcoming book on the "autolysin" treatof inoperable cancer. Perhaps we might forgive this were it not for the following paragraph: "This book tells how the general practitioner . . . may take an active hand in fighting the malady. The weapons he requires are an ordinary hypodermic syringe and some ampules of Autolysin. The syringe he already possesses. Autolysin he may secure, if he is a legally qualified practitioner, by writing," etc. Incidentally the book is advertised to the Intelligent Layman.

Isn't it beautiful? Too bad the lamented F. F. F. with his mock turtles or those prominent eugenists of scopolamin-morphin fame could not take a lesson in advertising. It was not very long ago that we were invited to come East and learn how to use "autolysin," or else pay the rather heavy fee for an imported tutor. Now all we need is a "gun" and some of the "dope." All this is interesting in view of the recent article on the failure of "autolysin" in mouse tumor. It is a foregone conclusion that a lot of "autolysin" will be used, so cancer patients, who have been told that they have cancer, will get better through suggestion, and a lot of enthusiastic reports will pour in from medical brethren who have never studied psychology. Then the thing will slump and we shall all be ready for the next fad.

Nevertheless, each one of these things furnishes us with a text for another sermon on ethics of medical advertising, so I suppose they do not live in vain.

J. W. FORCE, M.D., Berkeley, Calif.
Assistant Professor of Epidemiology, University of California.

[Comment.—With each of the foregoing communications is a circular letter from the Goodhue Company, advertising Dr. Henry Smith Williams' book on "The Autolysin Treatment of Cancer." With this circular is a booklet entitled "Notes on the Treatment of Inoperable Cancer with the New Remedy Autolysin (Horowitz-Beebe) Issued by the Autolysin Laboratory." Similar circular letters and pamphlets have been sent to The Journal from various parts of the country. The Goodhue Company, publishers, therefore are apparently killing two birds with one stone—advertising the book as well as "autolysin."

The Journal has been informed that Henry Smith Williams in some of his magazine articles uses the pen name "Stoddard Goodhue," and that Henry Smith Williams is a part owner of the Goodhue Publishing Company.

Articles on "autolysin" will be found in The Journal, Nov. 6, 1915, pp. 1641, 1647 and 1662. The article on "Action of 'Autolysin' on Mouse Tumors," by Dr. Francis Carter Wood, appeared in The Journal, Jan. 8, 1916.—Ed.]

Nitrous Oxid Versus Ether

To the Editor:—It was with much interest that I read Dr. A. R. Warner's article (The Journal, Dec. 4, 1915, p. 1973) and the letter of Dr. A. S. McCormick (Jan. 1, 1916, p. 49) commenting on the same. Both writers seem to regard it of considerable importance that a patient should not vomit while in transit from the operating table to the bed. I fail to see why such vomiting is harmful or disgraceful or anything more than a mild nuisance, provided a reasonably intelligent attendant is at the patient's head, armed with an emesis basin and ready to render such services as may be necessary.

We cannot get away from the fact that, with ether patients, more or less vomiting is sure to take place in a large percentage of cases. In these cases I have always held that, other things being equal, the sooner the patient vomits after the operation is over, the better. For, if we add an extra quantity of ether in order to postpone the inevitable for five or ten minutes, we are deliberately prolonging the anesthesia merely for the sake of appearances and the comfort of those whose office it is to convey the patient to his bed.

As regards nitrous oxid-oxygen anesthesias, vomiting takes place, according to my experience, in a proportion of cases by no means insignificant, even when the anesthesia has been satisfactory and no ether has been required. These patients, however, do not vomit, as a rule, in the hallways or on the elevators. Instead, they vomit on the operating table immediately after the withdrawal of the anesthetic.

William L. Soule, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

URINARY TESTS—ACIDOSIS AND ITS TREATMENT

To the Editor:—1. What are the tests for diacetic acid, acetone and indican in the urine?

2. What is the difference between acidosis and acidemia?

3. What is the treatment for these conditions?

F. W. Linn, M.D., Cleveland.

Answer.—1. Tests for diacetic acid, acetone and indican in the urine appear in practically all textbooks on clinical diagnosis or laboratory methods. Any of the following books may be consulted:

Emerson: Clinical Diagnosis, Philadelphia, J. B. Lippincott Company, $5.

Webster: Diagnostic Methods, Philadelphia, P. Blakiston's Son & Co., $4.50.

Sahli: Diagnostic Methods, Philadelphia, W. B. Saunders Company, $6.50.

Simon: Clinical Diagnosis, Philadelphia, Lea & Febiger, $5.

2. The term "acidemia" occurs occasionally, but has no standing. Acidity of a fluid depends on the concentration of free hydrogen ions in it. Normal arterial blood contains about the same number of free H ions as distilled water. When an amount of acid, as carbonic or fatty acid, enters the blood, it does not increase the number of free H ions in the blood by the same number as it contains itself in isolated form, and hence does not give rise to a degree of acidity of the blood corresponding to its own acidity. The blood has the property of resisting influences that tend to change its reaction, but of course this resistance is limited, and its range is narrowed whenever acids enter the blood. When a small amount of acid enters the blood, there is only a very slight increase in the concentration of free H ions, but the amount of acid now required to produce a real acidity would be less than before. The removal of this condition depends on the activity of the excretory organs; but if the condition is not sufficiently countered and persists, it is known as acidosis. If the amount of acid added to the blood is so great that the limit of resistance to change to acidity is passed, the H ion concentration would be greatly raised, but the fluid would no longer be blood in a physiologic sense. The term "acidemia," therefore, should not be used, because it seems to imply an acidity of the blood such as cannot obtain in a living animal. Acidosis was the subject of a symposium before the New York Academy of Medicine, abstracted The Journal, Jan. 8, 1916, p. 143.

Tests of the acidity of the urine may be used to detect acidosis. Palmer and Hendersen (*Arch. Int. Med.*, August, 1913, p. 153) say that "a condition of acidosis may be assumed to exist when the administration of a quantity of alkali equivalent to 1 liter of tenth-normal alkali fails to produce a diminution in the acidity of the urine."

3. The treatment of acidosis has been previously considered under the heading of Therapeutics, The Journal, Oct. 10, 1914, p. 1296, and Queries and Minor Notes, March 25, 1911, p. 917. A more recent discussion appears in this issue of The Journal under the heading of Therapeutics. The treatment recommended for acidosis is naturally the administration of large doses of alkali, according to the reaction of the urine tested on a specimen taken from six to eight hours after administration of the alkali. The method of Fischer consists in giving a hypertonic solution (sodium chlorid, 14 gm., sodium carbonate, 10 gm., and water 1,000 c.c.) by rectum by the drop method in doses of 500 c.c. at a time, twice a day. If the patient shows symptoms of impending uremia, 1,000 c.c. may be given by rectum or even intravenously.

THE COMPARATIVE VALUE OF STRONTIUM BROMID AND OTHER BROMIDS

To the Editor:—Kindly ask the author of the article on "Epilepsy," The Journal, January 8, to explain lines 42 to 45, p. 116, second column. It seems to be a case of "concise writing" as mentioned on page 136.

J. L. Tracy, M.D., Toledo, Ohio.

Answer.—The lines to which our correspondent refers read:

However, dose for dose, less strontium bromid is active than sodium bromid or potassium bromid.

The lines should have read:

However, dose for dose, strontium bromid is less active than sodium bromid or potassium bromid.

The reason for this is readily seen by comparing the molecular weights of the official bromids of sodium, potassium and strontium ($NaBr = 102.92$; $KBr = 119.02$; $SrBr_2 + 6H_2O = 355.57$). Sodium bromid contains about 77 per cent. of bromin, and potassium bromid contains about 67 per cent.; since the official strontium bromid contains only about 45 per cent. of bromin—about two-thirds as much bromin as that contained in potassium bromid and about three-fifths as much as that contained in sodium bromid—it might be expected that the bromin action from the strontium bromid would be much less than that from either of the other two salts. That the strontium salt of salicylic acid has no advantages over the sodium salt was pointed out in the report of the Council on Pharmacy and Chemistry on Rheumalgine (The Journal, June 26, 1915, p. 2156). This is confirmed by an article by M. A. Blankenhorn on strontium salicylate which appears in The Journal, this issue, p. 331.

The Antivaccinationists.—Jenner lived ahead of his day, but we are rapidly returning to ante-Jenner days.—*Buffalo Sanitary Bulletin.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

FLORIDA: Homeopathic, Jacksonville, March 10. Sec., Dr. J. B. Griffin, St. Augustine.

IOWA: Des Moines, Feb. 8-10. Sec., Dr. G. H. Sumner, State House, Des Moines.

KANSAS: Topeka, Feb. 8. Sec., Dr. H. A. Dykes, Lebanon.

VERMONT: Montpelier, Feb. 8-11. Sec., Dr. W. Scott Nay, Underhill.

Georgia October Report

Dr. C. T. Nolan, secretary of the State Board of Medical Examiners of Georgia, reports the written examination held at Atlanta, Oct. 12, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 27, of whom 14 passed and 13 failed. Eight candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Birmingham Medical College	(1914) 80, 80;	(1915)	81.1
Howard University		(1915)	82.3
Bennett Medical College	(1914) 86.6;	(1915)	86.9
University of Louisville		(1915)	83.6
Johns Hopkins University	(1914) 89.7;	(1915)	89.5
Jefferson Medical College		(1915)	90
University of Pennsylvania		(1915)	87.4
Meharry Medical College	(1914) 80, 83;	(1915)	80
	FAILED		
Birmingham Medical College		(1915)	71, 73.1, 74.5
Atlanta Medical College		(1915)	78.2, 78.6
Atlanta School of Medicine		(1909)	72.7
Chicago College of Medicine and Surgery		(1915)	65.7
Meharry Medical College	(1908) 73; (1912) 75.2;	(1915)	76.9, 77.2
Knoxville Medical College		(1908)	71.8
Vanderbilt University		(1915)	78.5

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Howard University		(1909)	W. Virginia
American Medical Missionary College		(1899)	Tennessee
Hospital College of Medicine, Richmond		(1905)	Kentucky
University of Louisville		(1915)	Kentucky
Columbia University, College of Phys. and Surgs.		(1904)	New Jersey
Woman's Medical College of Pennsylvania		(1909)	Penna.
Meharry Medical College		(1909)	Tennessee
Vanderbilt University		(1915)	Arkansas

Iowa Reciprocity Report

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports that 22 candidates were licensed through reciprocity, from January to October, 1915. The following colleges were represented:

College	Year Grad.	Reciprocity with
University of Colorado	(1911)	Colorado
University of Georgia	(1911)	Georgia
Chicago College of Medicine and Surgery	(1914)	Missouri
Northwestern University	(1908)	Michigan
Rush Medical College	(1876)	Missouri
Medical College of Indiana	(1881)	Nebraska
Detroit College of Medicine	(1911)	Michigan
University of Michigan, Medical School	(1914)	Michigan
Minneapolis College of Physicians and Surgeons	(1906)	Minnesota
Barnes Medical College	(1897)	Missouri
St. Louis University	(1905)	Missouri
Washington University	(1912)	Missouri
John A. Creighton Med. Coll. (1911, 2) (1912, 2)	(1913, 2)	Nebraska
University of Buffalo	(1899)	Penna.
Medico-Chirurgical College of Philadelphia	(1898)	Penna.
Marquette University	(1914, 2)	Wisconsin

Minnesota October Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, October 5-8, 1915. The total number of subjects examined in was 16; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 11, of whom 9 passed and 2 failed. Twelve candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College		(1915)	86, 86
Fort Wayne College of Medicine		(1898)	80
University of Louisville		(1909)	75
Harvard University	(1902) 84;	(1915)	86
University of Minnesota		(1916)	87,* 93*
Western University, London, Ont.		(1915)	77
	FAILED		
Chicago College of Medicine and Surgery		(1915)	75†
Hamline University		(1904)	73

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago		(1903)	S. Dakota
Northwestern University		(1913)	Illinois
Rush Medical College		(1908) (1913)	Illinois
University of Illinois		(1914)	Illinois
State University of Iowa, College of Medicine		(1915)	Iowa
Tulane University of Louisiana		(1906)	Louisiana
Johns Hopkins University		(1914)	Missouri
University of Maryland		(1911)	Maryland
Washington University		(1911)	Missouri
University of Nebraska		(1914)	Nebraska
University College of Medicine, Richmond		(1907)	N. Carolina

* These candidates did not complete their work with the class of 1915. They have now completed the work of the curriculum and will be recommended for their degrees at the next meeting of the administrative board.

† Fell below the required average in three subjects.

Oklahoma October Report

Dr. R. V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, Oct. 12-13, 1915. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 70. The total number of candidates examined was 15, including 1 osteopath, all of whom passed. Eighteen candidates, including 2 osteopaths, were licensed through reciprocity. Four candidates, including 1 nongraduate, were granted reregistration licenses. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Arkansas	(1912) 73;	(1913)	78
University of Louisville		(1909)	85
Tulane University of Louisiana		(1907)	86
Baltimore Medical College		(1903)	85
Johns Hopkins University		(1912)	87
Detroit College of Medicine and Surgery		(1915)	86
University Medical College, Kansas City		(1912)	81
University of Oklahoma		(1915)	81, 87
Jefferson Medical College		(1909)	90
University of Tennessee	(1914) 75;	(1915)	82, 85

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Arkansas Industrial University		(1898)	Arkansas
University of Arkansas		(1911)	Arkansas
University of Kansas		(1913, 2)	Kansas
Kentucky School of Medicine		(1905)	Kentucky
Tulane University of Louisiana		(1908)	Texas
St. Louis College of Physicians and Surgeons		(1910)	New Mexico
St. Louis University		(1906)	Kansas
Omaha Medical College		(1901)	Nebraska
Eclectic Medical College, Cincinnati		(1894)	Kansas
Pulte Medical College		(1880)	Nebraska
University of Nashville		(1909)	Tennessee
University of Tennessee		(1909)	Tennessee
Vanderbilt University		(1914)	Tennessee
Fort Worth School of Medicine		(1909) (1912)	Texas

Rhode Island October Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, Oct. 7-8, 1915. The total number of subjects examined in was 7; total number of questions asked, 60; percentage required to pass 80. The total number of candidates examined was 18, of whom 15 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University	(1914) 93.5;	(1915)	87.5
College of Phys. and Surgs., Baltimore	(1914) 80.1;	(1915)	88.1, 88.7
Harvard Univ.	(1913) 82.2; (1914) 87.5, 90.2;	(1915)	84.9, 85, 91
Tufts Coll. Med. School	(1908) 81.8; (1914) 89.2;	(1915)	83.7, 84.4
	FAILED		
Jefferson Medical College	(1912) 77.3;	(1914)	78.3
Medico-Chirurgical College of Philadelphia		(1915)	77.9

Book Notices

THE PHYSIOLOGY OF THE AMINO ACIDS. By Frank P. Underhill, Ph.D., Professor of Pathological Chemistry, Yale University. Cloth. Price, $1.35 net. Pp. 169, with illustrations. New Haven: Yale University Press, 1915.

In this handy little volume, Underhill reviews the great progress which has been made in our knowledge of biology, and especially in the physiology of nutrition, through the disclosure of the composition of the protein molecule as a complex of amino acids. As the knowledge thus gained is fundamental to any grasp of the problems of digestion and metabolism in health and disease, and as this information has been obtained so recently that it was not included in the education of most practicing physicians, the presentation of so compact and clear a summarization of the subject is a most commendable enterprise. The author has evidently written with the needs of the progressive practitioner and student foremost in his mind, and has provided a statement that should be readily understood by them.

After a brief description of the composition of the proteins and amino acids, there are discussions of their behavior in digestion, absorption and intermediary metabolism. A final chapter gives the essential facts of the rôle of the several amino acids in nutrition, especially as disclosed by the important investigations of Osborne and Mendel.

The work is exceptionally readable, and there is a noticeable simplicity and lucidity that add much to its value for the use of practitioners not specially trained in biologic chemistry. Only the most essential work is, of course, covered in so small a volume. We notice no important omissions. Criticism may be directed to the importance ascribed to Abderhalden's detection of free amino acids in drawn blood and the omission of reference to the previous and much more valuable demonstration of amino acids in circulating blood by Abel, but this is a minor matter. Every physician who wishes to keep abreast with this important development in physiology should take advantage of the opportunity offered by Underhill to obtain the necessary information in so concise, inexpensive and readable a treatise.

CONTRIBUTIONS TO PRACTICAL PHYSIOLOGY AND PHARMACOLOGY. By Charles Claude Guthrie, Professor of Physiology and Pharmacology, University of Pittsburgh Medical School. Paper. Gratis. Pp. 71, with 74 illustrations.

The author urges that students of physiology be provided with apparatus in order that their minds may not be distracted from the physiologic phenomena to be revealed by their experiments. He has devoted thought and ingenuity to improvements in apparatus, and in this brochure laudably offers the fruits of his efforts to others. There are diagrams, illustrations and descriptions of several devices that have stood the test of hard usage; they are clever and should furnish valuable hints to other laboratory teachers. In some cases, however, there is hardly enough detail given to enable one to reproduce the apparatus readily, and in any case an accurate mechanic and well appointed machine shop must be available.

QUANTITATIVE LAWS IN BIOLOGICAL CHEMISTRY. By Svante Arrhenius, Ph.D., M.D., LL.D., Director of the Nobel Institute of Physical Chemistry. Cloth. Price, 6 shillings net. Pp. 164. London: G. Bell & Sons, 1915.

In 1907, Arrhenius published his book on immunochemistry, which discussed the application of the laws of physical chemistry to the processes of immunity and enzyme activity and related phenomena. Coming from the great pioneer in physical chemistry, the work attracted much attention from those engaged in investigations in immunology and in physical chemistry; but, judged by the standard of its influence on the subsequent development of these sciences, it seems to have had little effect. For the most part, the immunologists seemed to feel that the methods available for quantitative measurements of immunity reactions are far too inexact to give results suitable for the deduction of physicochemical laws. Certain it is that the entrance of Arrhenius into this field has not resulted in the expected recruiting of many other workers along similar lines.

His latest book treats of much the same subjects as the immunochemistry, and is based on the Tyndall lectures given by him in 1914. He asserts the need for the development of this side of biologic chemistry, saying: "I am convinced that biologic chemistry cannot develop into a real science without the aid of the exact methods offered by physical chemistry. The aversion shown by biochemists, who have in most cases a medical education, to exact methods is very easily understood. They are not acquainted with such elementary notions as 'experimental errors,' 'probable errors,' and so forth, which are necessary for drawing valid conclusions from experiments. The physical chemists have found that the biochemical theories, which are still accepted in medical circles, are founded on an absolutely unreliable basis and must be replaced by other notions agreeing with the fundamental laws of general chemistry."

The book is of so technical a character that it will be read only by those well versed in physical chemistry, for whom, and the student of fundamental problems of immunology, it will have interest.

MEDICAL AND VETERINARY ENTOMOLOGY. A Textbook for Use in Schools and Colleges as Well as a Handbook for the Use of Physicians, Veterinarians and Public Health Officials. By William B. Herms, Associate Professor of Parasitology in the University of California. Cloth. Price, $4. Pp. 393, with 228 illustrations. New York: The Macmillan Company, 1915.

Medical entomology is a relatively new science of immense economic and sanitary importance, for example, the cost of screening, fly poisons, etc., has been estimated to exceed twelve million dollars annually. The author has prepared in systematic form a discussion of various insects and parasites, and of their relation to disease in man and in animals. The articles on the mosquito, the house-fly and the ticks are especially to be commended. There are numerous references to literature, but the author does not attempt to give a complete bibliography of any field. He has, however, followed closely recent literature on his subject, so that his book is thoroughly up to date. Further, it contains several original observations which have not yet appeared in any other publication. Sections are devoted to methods of prevention and control of insect pests, as well as to the treatment of bites and stings. The latter, of course, are rather trivial in character, in view of the greater importance of insects in the transmission of serious diseases. The book is excellently illustrated. It is to be especially recommended to American readers as the production of an American author who does not slight the important researches made in this country.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. A Layman's Handbook on Treatment. By Lawrason Brown, M.D. Cloth. Price, $1. Pp. 173. Saranac Lake, N. Y.: The Author, 1915.

The author has no fads to advocate, nor pet theories to exploit. Having for a long time been associated with the lamented Trudeau in his tuberculosis work at Saranac Lake, Dr. Brown knows the problems that face the consumptive who attempts to live a life that shall make him an acceptable member of society, rather than a person to be shunned. He has presented his subject in simple language, so that the average layman may understand it. The afflicted is instructed how to live, so that he may not only prolong his own life as much as possible, but may also protect his relatives and friends who may be associated with him. The book is an ideal one to put into the hands of the consumptive, and of those who have consumptives to care for.

BANDAGING. By A. D. Whiting, M.D., Instructor in Surgery in the University of Pennsylvania. Cloth. Price, $1.25 net. Pp. 151, with 117 illustrations. Philadelphia: W. B. Saunders Company, 1915.

In this book the author has repeated the material given in his course on this subject at the University of Pennsylvania. The book is elementary in character and wholly practical. Illustrations occur on almost every page, detailing the various steps in applying dressings and bandages of every type.

Medicolegal

When Husband Not Liable for Medical Services or Attendance on Childbirth

(Johnson vs. Coleman (Ala.), 69 So. R. 318)

The Court of Appeals of Alabama reverses a judgment obtained by the plaintiff, a physician, who sued a husband for $10 as the reasonable value of professional services rendered to the latter's wife during childbirth while living apart from him. The court says that medical services are necessaries within the contemplation of the rule making the husband liable for necessaries furnished to the wife, and when such services are necessary the husband cannot escape liability therefor by showing that he did not call in the physician, or even that the physician was called in against his consent and over his objections. If, however, through no fault of the husband, the wife abandons his home and refuses to live or cohabit with him, he is not responsible for her necessaries, unless expressly requested by him; and persons furnishing her with the same under such circumstances cannot, on any theory of an implied request or of implied agency of the wife to bind the husband, collect from the husband. And the mere fact that the wife is living separate and apart from her husband is sufficient notice to the public, who may deal with her, to put them on inquiry and to advise them that, so far as the liability of the husband is concerned, they credit the wife at their peril, since the law is that in cases of separation the presumption is that the husband is not liable, placing the burden of proof on the party furnishing the necessaries to show that the separation took place under such circumstances as would render the husband liable; that is, took place as a result of his cruelty, violence, abandonment, or other misconduct or fault on his part. In this case it appeared without dispute in the evidence that three and a half months before the services were rendered the wife voluntarily abandoned the husband against his consent and without fault on his part, so far as appeared, and had ever since lived separate and apart from him at the home of her father, where she was at the time she gave birth to the child, and where at such time the plaintiff was called in over the telephone by some one at the house—not the husband—to minister to her needs. There was no dispute that the services were necessary, nor that $10, the amount recovered, was the reasonable value thereof, nor that the husband was the father of the child delivered, nor that the physician had not heard of the separation before the time he was called in. The sole insistence of the husband was that he was not liable for the physician's fee on account of the fact that the wife had, at that time, abandoned him and was then living apart from him, over his objection and through no fault of his own. And plaintiff's counsel admitted that if the services sued for had been such that it could be said that they were rendered exclusively for the wife's benefit, the nonliability of the defendant contended for would then hold good; but it was insisted that where the services were, as here, equally as necessary to the preservation of the life of the child, the defendant's own offspring, as of the wife, its mother, then the defendant was liable, not on any theory of liability for necessaries furnished his wife, who had abandoned him, but on the theory of his liability for necessaries furnished his child. The court answers that by quoting: "The husband remains liable for the support of his minor children where he and his wife voluntarily separate, or where he consents to the children living with the mother, or where the wife leaves him for good cause; but it is otherwise where the wife leaves without cause, taking the children with her." Wherefore the judgment for the plaintiff must be reversed.

Industrial Health Prerequisites.—A proper place to work, and safe methods of working, and some knowledge of the dangers to health and life are prerequisites to conducting any business, or to working, no matter whether one man or a thousand are concerned, and whether the individual is an employer or an employee.—*Ohio Public Health Journal.*

Society Proceedings

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Wednesday, Jan. 12, 1916

The President, DR. E. E. MONTGOMERY, in the Chair

SYMPOSIUM ON IMPORTANT EVERY-DAY ECONOMIC AND ETHICAL PROBLEMS OF THE PRACTITIONER OF MEDICINE

The Problem of Increasing the Physician's Income: What Shall We Do to Be Saved?

DR. THOMAS F. REILLY, New York: The principal reason the profession has not solved this problem is an erroneous concept of altruism which has failed to acknowledge that money is desideratum to the doctor. The high cost of living, which makes the dollar of today have a smaller purchasing value than 50 cents had twenty years ago, renders the situation acute. Every one, except the doctor, has raised his charge for services. The doctor has improved his service to the community by his use of telephone and automobile, by more thorough examination, and in other ways; yet he has not capitalized any of these improvements in service. The fees for ordinary services can be raised only by (1) a concerted effort of the physicians of a community, or (2) by the independent raising of fees by the individual physician. In a small community, charges can best be raised by concerted effort on the part of more than half of the practitioners in the locality. In large cities the county society is the only medium through which just fees for professional service can be determined and announced. Other organizations are more or less of mushroom growth; when they are started, they look promising, but almost invariably they fade away after a year or two. In large cities, permanent medical organization is not an easy thing to bring about. Attempts to bring all of the members of the profession into one body, even though the aim be for the common good, are but empty dreams. Most of the profession would rather be sacrificed than find their names bracketed with crooked sticks and doubtful moralists. It should be feasible in a large city for the county society to insert paid advertisements and reading notices explaining to the public the high cost of medical life, and then follow this with a statement of approved charges for physician's services founded on a living wage. Iteration and reiteration of this matter will make practicable the collection of higher fees by the individual practitioner. When fees are to be raised by the individual physician, independent of the society, it may be advisable to make the change by first doubling the fee for the first examination; at a later period, all counsel can be charged for at the new fee. To do this the physician must give better service—a more thorough examination at the first visit and special treatments at each succeeding visit. It is sheer folly for general practitioners to criticize proper fees charged by specialists and surgeons, simply because these charges are larger than the amount collected by the general practitioners for routine service.

Ethics of Fees and Fee Splitting

DR. JOHN B. ROBERTS: Graduates in medicine at the present time may choose (1) a strictly scientific medical career, (2) a sociological one, (3) a pedagogic service or (4) the mere treating of disease. The last was the only vocation formerly adopted by physicians. In the three forms of professional life first mentioned there is no question arising as to fees. The laboratory man, the municipal officer and the college teacher receive a definite salary. The ethical point which presents itself to the therapeutic doctor is, How much value shall he place on his services rendered to a sick or injured patient? It must be determined by the quality and duration of attendance and the responsibility assumed by the doctor. The relation is not entirely a commercial one but has a professional nature like that of a lawyer or priest. The physician must, therefore, be willing to reduce his charge from what he would ask when the patient is known to be

unable to pay a just and proper fee. If the doctor is unwilling to do this he should not assume the relation of professional adviser to a man probably unable to pay his full fee. The term "fee splitting" has been used to describe the giving of a commission by a specialist when a case of disease or injury is referred by another physician. The term is a bad one because it does not include in the title the real point which makes the division of a fee reprehensible, namely, the secrecy of the cleavage. The patient's money may be divided among as many doctors as you please, provided the patient knows who gets his money—is fully informed as to the terms of the transaction.

Psychology of the Physician as a Wage Earner

DR. CHARLES W. BURR: I was somewhat astonished the other day at being told that I am a wage earner. In the simplicity of my innocence I had believed, or subconsciously assumed, that physicians did not get wages, but deigned to accept fees. I thought we did things daily that are not paid for, that cannot be paid for, save in a coin that has a different ring than gold. How does the physician differ psychologically from other wage earners? What is the defect in his mentality compelling him to continue poor but honest, instead of as our advisers would like us to be, rich and wicked, according to the new morality. In any psychologic study the factors compelling and controlling conduct are of first importance. If, then, the influences which lead men to become physicians are of the kind which would not influence men in general, physicians have a peculiar psychologic makeup—are abnormal, or superior. Chance, choice and destiny make men physicians. Excluding the small percentage of men who go into medicine from purely altruistic motives, there are five classes of men who study medicine: (1) those who do not want to work with their hands, because they imagine it is easier to work with the mind and much more respectable; (2) those who think medicine is a gentlemanly occupation and sometimes enables one to marry a rich wife; (3) the men who believe they can make money by criminal practices without being caught; (4) those who think they can make money, notwithstanding the general opinion to the contrary, and (5) those who have a hunger for things intellectual, are drunk with scientific inquisitiveness and curious to learn the secrets of that strange machine, the living animal. When destiny agrees with choice we have the student who alone should be encouraged, and of this type there are enough to meet the need of the country for physicians. The time is coming when these physicians by choice and destiny alone will survive, and there will be no need of discussions on the salvation from being poor. I do not find anything in the physician as a wage earner differentiating him from the rest of the world. I think about as many physicians proportionately as business men are making an income of $10,000 a year, which amateur sociologists tell us means success. I do not find the physician more careless in business matters than other people. There is, however, a psychologic answer to the wage question among physicians, that of permitting to study medicine only those in whom choice and destiny combine. The few schools of the better class have already taken steps in this direction. When low class medical schools cease to exist, the wage question will take care of itself.

Safe and Sane Investments for Physicians

MR. THOMAS S. GATES, President of the Philadelphia Trust Company: There is a science of investments, just as there is a science of medicine. Your profession would view with contempt "patent medicine" advertisements, yet many of the alluring invitations to invest money are quite as remote from the proper fields of investment as the "patent medicine" bottle is from the intelligent doctor. Stocks and bonds which are fundamentally most desirable do not appeal for buyers through the paper at all. Those who are not actively engaged in the business of caring for money would do well to regard that function as a specialized one, and enter it on their own account with the same caution that a banker, for instance, would attempt to write a prescription. A few cardinal principles, positive and negative, govern the investment of money. Regarding the negative rules, let me say that the mere fact that one has money to invest is no argument for doing so at the moment; ruling prices should be considered. If the temptation is to buy a stock rather than a bond, remember that in buying stock you become a partner in the business and should know something of its management and of the industrial conditions surrounding it. If the temptation is to buy a mining investment, the important point to bear in mind is that a mine is ever consuming itself. Further, the salability of an investment must not be overlooked. If the first judgment in making the purchase was wrong, it is better to face a loss and start over again than to stick to a bad bargain. On the positive side, it may be stated that the busy professional man invests his accumulated earnings to better advantage if he assumes certain fixed charges whereby his savings month by month are placed in the hands of those qualified to make earnings pay. One of the best forms of such investments is that of life insurance, which, as operated today under state regulation, gives the protection of savings for after years with a larger payment in case of death. Then there is the building and loan association. This is also under state control, and when well managed yields the investor a very fair return and gives him an investment on real estate security, which in the last analysis is the highest form possible.

The world has regarded investment in anything other than land as legitimate for only a few generations. For many centuries the church proscribed the taking of interest as a moral offense, and the laws of nearly all civilized countries made it a crime, while the voice of publicists and ethical writers were raised against it. The origin of this prejudice is commonly attributed to a passage in Aristotle to the effect that as money does not produce money, nothing more than the principal sum loaned could be equitably claimed, and to John Calvin is attributed the high honor of having first detected the fallacy of this argument by observing that while money does not produce money, that which may be purchased with money does, and that herein is a perfect justification for the payment of interest.

A mortgage on real estate is not a particularly good investment for a doctor unless the mortgage is in the hands of some one who can attend to the details of the condition of the property. In the buying of a bond, which is the lending of money to a corporation, the purchaser should ascertain that the corporation occupies a satisfactory place in the industrial field in which it moves, that the bond is secured by a first mortgage protected by an adequate sinking fund, does not run for too long a time, and is salable. Business and professional men successful in making money give surprisingly little thought to its safe investment; they follow individual hobbies, and lose. The point to be always borne in mind is the difference between money invested or loaned at interest and money embarked in speculation. The rules which obtain in the making of an investment obtain also in its sale. A bond may have maintained a certain fixed price for a considerable period, yet if its sale is improperly handled the price may greatly fall. This may be observed in the offering of a few bonds to several brokers, who in turn may offer them to several banks resulting in an apparent avalanche of the particular bond. In conclusion I may say that to the average person the purchase of stocks offers no investment at all. He becomes only a small partner in an uncertain enterprise. There is needed the technic of the professional trader or the fatuous stroke of luck to spell success, and as to these, it is observed that the few who have the gift of winning tell us the least of how it is done.

The Duty of the County Society

DR. JOHN B. MCALLISTER, Harrisburg, Pa.: When I read the program for tonight's meeting I thought the best investment I could make would be that of my time in coming here. It has been a good investment of time, and I regard it as unfortunate that such subjects are not more frequently discussed in our medical associations. There was a time when a physician prided himself on working hard and living and

dying in poverty. It is fortunate that the physician has awakened to the importance of looking after the business part of his life. I wish that the men who have read these papers tonight could visit all the sixty-three county societies in this state and give this symposium. It would help the profession and it would help our state society.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

January, LXXIII, No. 1, pp. 1-192

1 *High Degrees of Heat vs. Low Degrees of Heat as Palliative Treatment for Advanced Cases of Carcinoma of Uterus. H. J. Boldt, New York.
2 Contraction Ring Dystocia. P. T. Harper, Albany, N. Y.
3 *Treatment of Uterine Hemorrhage by Roentgen Ray. J. A. Corscaden, New York.
4 Toxemia of Pregnancy. R. Moulden, Friendship Heights, Md.
5 Case of Pelvic Cellulitis, or Phlegmon Ligneux of Pelvis. W. A. Jayne, Denver.
6 Marriage. G. E. Malsbary, Los Angeles.
7 *Teaching of Obstetrics. C. E. Ziegler, Pittsburgh.
8 *Surgical Operations During Pregnant State. F. Reder, St. Louis.
9 Value of Pituitary Extract in Obstetrics and Gynecology. S. W. Bandler, New York.
10 *Study of Forty-Five Hundred Menstrual Histories. K. I. Sanes, Pittsburgh.
11 Principles of Gynecology. H. S. Lott, Winston, N. C.
12 *Anesthesia in Gynecologic Operations. R. R. Huggins, Pittsburgh.
13 Colloidal Silver in Sepsis. G. Van Amber Brown, Detroit.
14 Transposition of Bladder and Uterus for Cure of Cystoceles and Descensus Uteri. L. F. Smead, Toledo.

1. Abstracted in THE JOURNAL, Jan. 8, p. 142.

3. **Roentgen Treatment of Uterine Hemorrhage.**—Corscaden's results have been as follows in twenty women 38 years of age and over whether possessing fibroids or not: Complete amenorrhea in 5 per cent. from the onset, in 5 per cent. after one period, in 5 per cent. after three periods and in 85 per cent. after two periods. The first period occasionally is profuse. All of the cases have been severe enough partially or completely to incapacitate the women. Activities were resumed usually about three weeks after the first exposure. Corscaden has attempted this treatment in younger women twice; these cases have been recent and have presented no difficulties. Amenorrhea for three months followed by scant flow for two periods in one case and an oligomenorrhea of six months followed by a profuse flow which responds to treatment in the second, have been the results obtained. Severe untoward effects have occurred in only two cases. One patient suffered from nausea and diarrhea, the other from diarrhea indistinguishable from mucous colitis. Many of the women felt fatigued for a day or two and a few suffered headaches; albumin and casts appeared in the urine of one woman. No late effects other than those accompanying the menopause have been noted save in one case in which there was an attack of uremia six months after the end of treatment in a woman suffering from large polycystic kidneys. No dermatitis has resulted from the dosage. A small linear burn occurred in the first case treated because of imperfect apposition of the lead protection. Slight vesication resulted but the skin became normal again in six weeks. This accident has not recurred.

Corscaden says that menstruation is dependent on the activities of the corpus luteum. The Roentgen rays destroy the follicle apparatus of the ovary and thereby automatically bring about a menopause. All patients with myomas which do not constitute an immediate or remote menace aside from that of hemorrhage are proper subjects for the production of the menopause, provided that ulcerative changes or pedunculated fibroids or polyps do not exist, and provided that the possessor be over 37 years of age. All myomas which constitute a menace in women under 38 should be excised rather than subjected to Roentgen rays unless operation is contraindicated. In hemorrhage from malignant disease Roentgen rays are contraindicated.

7, 8, 10 and 12. Abstracted in THE JOURNAL, Oct. 2, 1915, pp. 1213 and 1214.

American Journal of Orthopedic Surgery, Boston

January, XIV, No. 1, pp. 1-58

15 Treatment of Tuberculous Arthritis. J. J. Nutt, New York.
16 Tarsectomy for Relapsed Club-Foot. A. G. Cook, Hartford, Conn.
17 Tendon Fixation in Infantile Paralysis; Review of One Hundred and Fifty Operations. W. E. Gallie, Toronto, Canada.
18 Fate of Bone Grafts. G. W. Hawley, Bridgeport, Conn.
19 Congenital Deformities of Vertebrae and Ribs; Report of Four Cases. F. G. Hodgson, Atlanta, Ga.

American Journal of Physiology, Baltimore

January, XXXIX, No. 3, pp. 239-353

20 Initial Length—Initial Tension and Tone of Auricular Muscle in Relation to Myodynamics and Cardiodynamics. R. Gesell, St. Louis.
21 *Action of Various Pituitary Extracts on Isolated Intestinal Loop. V. N. Shamoff, Petrograd, Russia.
22 Secretory Discharge of Pituitary Body Produced by Stimulation of Superior Cervical Sympathetic Ganglion. V. N. Shamoff, Petrograd, Russia.
23 Origin of Cardiac Impulse in Turtle's Heart. W. J. Meek and J. A. E. Eyster, Madison, Wis.
24 Ionic Antagonism in Sensory Stimulation. W. J. Crozier, Cleveland.
25 *Physiology of Stomach. Effect of Experimental Partial Stenosis of Pylorus on Motility of Empty Stomach. O. J. Elsesser, Chicago.
26 *Id. Tonus and Contractions of Empty Stomach of Infants with Congenital Pyloric Stenosis, Pylorospasm and Chronic Vomiting (Merycism). A. J. Carlson and H. Ginsburg, Chicago.
27 Resistance of Fresh Water Fish to Changes of Osmotic and Chemical Conditions. W. E. Garrey, St. Louis.
28 *Physiology of Empty Stomach. Effect of Dreaming on Gastric Hunger Contractions. A. B. Luckhardt, Chicago.
29 *Mode of Action of Ultraviolet Radiation in Injuring Living Cells with Special Reference to Those Constituting Eye. W. E. Burge, Chicago.
30 *Effects on Gastric Secretion of Organ Extracts. J. Rogers, J. M. Rahe, G. G. Fawcett and G. S. Hackett, New York.

21. **Action of Pituitary Extracts on Isolated Intestine.**—It is stated by Shamoff that there exists in the posterior lobe of the pituitary body some substance which has an action on the isolated intestinal loop resembling the action of epinephrin, a substance, moreover, which may be other than that which raises blood pressure and causes diuresis. The substance is not constant in the extractives prepared in the usual ways and may be inconstant in the fresh glands from which these substances are prepared. Its presence or absence in the extracts may depend on the method of preparation. The conclusion drawn by Shamoff is that certain posterior lobe preparations are capable of producing relaxation of the isolated intestinal loop and of inhibiting its rhythmic contractions, resembling in this respect the extracts of the suprarenal medulla.

25. **Experimental Pyloric Stenosis on Gastric Motility.**—Elsesser found that partial pyloric stenosis in dogs produces hypertonicity, and hypermotility of the empty stomach, even if of but a few days' or weeks' duration. These motor phenomena closely simulate those seen in man (filled stomach) with pathologic lesions of the pylorus. The same conditions which lead to hypermotility, etc., during digestion, lead at the same time to increased motility of the empty stomach. In other words, partial pyloric stenosis appears to produce a neuromuscular hyperactivity, independent of the presence of food in the stomach.

26. **Tonus and Contractions of Empty Stomach of Infants.**—The motor conditions of the empty stomach were studied by Carlson and Ginsburg in two infants, one with congenital pyloric stenosis, and one with pylorus spasm, chronic vomiting and rumination. The results indicate that pylorus spasm and pyloric stenosis involve either primarily or secondarily a condition of hypertonus and hypermotility of the entire stomach. The authors suggest that the excessive contraction of the pylorus may be an expression of this general hypermotility.

28. **Effect of Dreaming on Contractions of Stomach.**—Although the contractions of the empty stomach (hunger contractions) become more vigorous with the onset of and during sleep because the inhibitory mechanism is no longer

influenced by the sensory impulses reaching it through the optic, olfactory, and acoustic nerves (the exteroceptive field of Sherrington), Luckhardt states that the hunger contractions may be greatly diminished even during sleep if the sleeping state is accompanied by pronounced cerebral activity (dreaming). The same cerebral state which effects movements of the limbs, tail and muscles of the face effects an inhibition of the contractions of the stomach. The inhibition is therefore purely central in origin, since it is not brought about by any impulse coming into the central nervous system by any known sensory nerve.

29. **Injurious Action of Ultraviolet Radiation.**—Burge claims that ultraviolet radiation kills living cells and tissues by changing the protoplasm of the cells in such a way that certain salts can combine with the protoplasm to form an insoluble compound or coagulum. The effective region of the spectrum in changing the living material of the cell or protoplasm lies between 254 microns and 302 microns. The most effective region is around 254 microns for the small quartz mercury burner used, and around 302 microns for the large quartz mercury burner used. An opacity of the lens or cataract can be produced in fish living in solutions of those salts found to be greatly increased in human cataractous lenses by exposing the eye of the fish to radiation from a quartz mercury-vapor burner. This cannot be done by exposing the eyes of fish living in tap water containing small quantities of these salts. Abnormal quantities of the salts of calcium and sodium silicate in the cells of the eyelids and of the cornea increase the effectiveness of ultraviolet radiation in producing anterior eye trouble. Abnormal quantities of calcium salts on the skin also increase the effectiveness of the short wave lengths in sunlight in producing sunburn.

30. **Effects of Organ Extracts on Gastric Secretion.**—The authors summarize their paper as follows: The thyroid, or only the noncoagulable portion of an aqueous extract of the thyroid, contains a substance which is an active stimulant of both the gastric secretion and the gastric motility. Only the residue portion of an aqueous extract of the parathyroid and thymus glands, and of the spleen and liver, have a similar effect. Both the coagulable and the noncoagulable portions of an aqueous extract of the pancreas are vigorous stimulants of gastric secretion. The pituitary and suprarenal residues inhibit the flow of gastric secretion. All the stimulant residues seem to act on some peripheral gastric mechanism in which the nervous system is an essential part. The residue, or noncoagulable portion of an aqueous extract of the pituitary, pineal, thyroid, parathyroid, thymus and suprarenal glands, and of the spleen and liver, contains all of the material which shows a demonstrable action on other organs.

Annals of Surgery, Philadelphia

January, LXII, No. 1, pp. 1-128

31 Gas Bacillus Infection. A. M. Fauntleroy, Washington, D. C.
32 Significance of Foreign Bodies in Tissues. W. Martin, New York.
33 *Primary Neoplasms of Lymph Nodes Including Hodgkin's Disease. W. B. Coley, New York.
34 Surgical Anatomy of Thyroid and Parathyroids. E. H. Pool and H. C. Falk, New York.
35 Nonstrangulated Diaphragmatic Hernia Due to Indirect Injury. D. C. Balfour, Rochester, Minn.
36 Use of Free Omental Grafts in Abdominal Surgery. L. Freeman, Denver.
37 *Ligation of Splenic Vessels as Substitute for Splenectomy in Blood Diseases. A. Troell, Stockholm, Sweden.
38 *Repair of Small Vesicovaginal Fistula. C. H. Mayo, Rochester, Minn.
39 Method for Obtaining Uncontaminated Blood from Dogs and Other Animals. C. Goodman, New York.

33. **Primary Neoplasms of Lymph Nodes.**—One hundred and sixty-seven cases of primary neoplasms of the lymph nodes, including Hodgkin's disease, have been personally observed by Coley within the last twenty years. Twenty-six of the patients have been treated successfully, that is, the tumors (inoperable) entirely disappeared with the mixed toxins of erysipelas and *Bacillus prodigiosus,* and have remained well from one to twenty-two years. Nineteen patients remained well from three to twenty-two years. Of 76 cases of sarcoma of the neck, 8 have remained well from two to fourteen years. Of 24 cases of sarcoma of tonsil and neck, 5 have remained well from one and one-half to nine and one-half years. Of 10 cases of sarcoma of the mesenteric and retroperitoneal glands, 4 have remained well from one to twelve years. Of 17 cases of sarcoma of inguinal glands, 3 have remained well from four to seven years. Of 18 cases of neoplasms primary in the axillary glands, 4 have remained well from three to nine years. One case of sarcoma of mediastinal glands has remained well six years. Of 21 cases of Hodgkin's disease 1 remained well for seven months after complete disappearance of the disease under five weeks' toxin treatment. The patient refused further treatment and died of a recurrence one year later.

In the list of cases of other men (treated under Coley's direction) one Hodgkin's case recovered, and remains well, at present, seven years later. In a certain number of cases in which the tumor or tumors had entirely disappeared under the toxin treatment and the patients were apparently cured, the disease recurred at varying intervals from six months to six years. The most important lesson to be learned from a study of these recurrent cases, Coley believes, is that in many of them the treatment was not kept up sufficiently long. He is convinced that it is better to continue the treatment longer than may be absolutely necessary in a certain number of cases, rather than run the risk of a recurrence by too short a course of treatment in certain other cases. In cases in which the toxins fail to control the disease, Coley says, it is advisable to use Roentgen rays or radium or both in conjunction with the toxins.

37. **Ligation of Splenic Vessels.**—Because of the danger of splenectomy Troell suggests ligation of a larger or smaller number of splenic vessels as a substitute. He reports on many animal experiments made by him. The operations were so far successful that peritonitis never occurred. Healing followed without any trouble, the animals recovered soon after the operation and, with some few exceptions, seemed to do well. However, the results of this series of operations in a way were not very encouraging because Troell had overlooked the fact that anastomosing branches which exist between the splenic and the gastro-epiploic vessels could be so extensive. By ascertaining the anatomic state of the vessels, he found it very desirable to undertake a new series of ligations. In this series care was taken, in order to cut off the blood supply to a certain part of the spleen, to place the ligature distal to the transverse branches extending between the individual arteries, or a supplementary ligation of the corresponding transverse anastomosing branches should be made. This second ligature should, therefore, be placed and tied in the direction of the ligamentum gastrosplenicum, at a right angle with the first ligature. Postoperative peritoneal infection did not occur. As for the changes produced in the spleen itself, they consisted of an infarction of a greater or less portion of the organ, or in a simple reduction of the volume of the spleen without demonstrable infarcts.

38. **Repair of Small Vesicovaginal Fistula.**—In cases in which the lumen does not exceed a quarter of an inch, the following procedure is recommended by Mayo: An incision is made through the vaginal mucosa extending completely around the fistulous opening about a quarter of an inch or less from its margins. The vaginal mucosa is dissected toward the opening, care being taken not to break through at the margin. This makes a little cup or funnel-shaped opening projecting into the vagina. The circular dissection is carried deeper around the fistula, not approaching nearer than one-eighth of an inch to the margin, its depth penetrating to the mucosa of the bladder but not through it. This leaves a little bell or funnel-shaped opening lined with mucous membrane which is connected with the mucosa of the bladder and projects into the vagina. A ligature carrier is passed through the urethra into the bladder and through the fistula into the vagina. A suture is passed through both walls of the funnelled mucosa on each side of the ligature carrier. The two ends of the silk suture are now threaded into the ligature carrier which is withdrawn from the bladder and urethra. The ends of the suture projecting from the urethra are drawn on, and with a little aid the fistulous tract

starts inverting. As soon as the mucosa disappears a circular suture of fine chromic catgut is applied, a little more traction is used on the ends of the long suture and a second purse-string suture of catgut is applied. The vaginal side is now closed either by a circular suture of the chromic catgut or by interrupted sutures as seems best. This inversion turns the mucous surface into the bladder and leaves a healing surface within the tube. One of the long ends of the suture projecting from the urethra is rethreaded and by a needle is sutured to the skin of the labia. The two ends are now tied at this point, making slight traction.

A self-retaining catheter (Pezzer type) is inserted into the bladder and the patient is instructed to rest on her side or even on her face. This keeps the fistulous area free from urinary pressure. After four days it is necessary carefully to watch the catheter that sediment or phosphatic deposit does not obstruct its lumen. In some cases irrigation is necessary. However, the long suture attached to the inner side of the surface of the fistula and passing through the urethra acts as a safety valve of leakage should the catheter become temporarily plugged. After a week the repair is usually solid, but it is better to keep the patient on her side or face for a few days longer that no undue strain may be placed on the fistulous area, and during this time it is best to keep a catheter in, or if it is removed to have regular periods for passing it. The suture from within the bladder either cuts itself out with the slight traction before it is time to remove the catheter, or it may be drawn out without difficulty by cutting one side where it is attached to the skin.

Boston Medical and Surgical Journal

January 13, CLXXIV, No. 2, pp. 37-72

40 Gunshot Fractures of Extremities. R. B. Greenough, R. B. Osgood and B. Vincent, Boston.
41 Simulation of Esophageal Stenosis by Extensive Carcinosis of Lesser Curvature of Stomach. A. E. Austin, Boston.
42 *Simulation of Diabetes Mellitus. G. Blumer, New Haven, Conn.
43 Development of Gold Sol Paretic Reaction as Compared with Cerebrospinal Syphilitic Type. H. C. Solomon and E. S. Welles, Boston.
44 Syphilis and Psychopathic Hospital. E. E. Southard, Boston.

42. **Simulation of Diabetes Mellitus.**—Blumer cites the case of a woman, 33 years of age, sent to him for a pruritus of the vulva. The patient's family history was entirely negative. Her parents and her brothers and sisters were all alive and well, and there was no history of nervous or mental disease in the family. As a child the patient had had measles, whooping cough, chickenpox, mumps, tonsillitis and scarlatina. There were no complications with any of these diseases. The menstrual history was normal. There was no venereal history. The patient had always been a good eater, fond of meat, sweets and candy. She was not on a special diet at the time she consulted Blumer. The patient dated the pruritus vulvae from a period twenty months before. It had appeared rather suddenly, and had been present since that time. It varied in intensity and tended to be worse at night. It was severe enough at times to interfere with sleep. Urination increased the pruritus. There was no increase in the output of urine. The patient stated that she felt weak, but thought this due to loss of sleep. She had lost 20 pounds in the preceding nine months. There was no general pruritus. The appetite was not abnormal. The patient was very thirsty at times; at other times she "despised" water. She stated that occasionally she had severe frontal headaches with anorexia and even slight nausea. With these her face was flushed. She was more nervous than usual and tended to be constipated. The physical examination was almost negative.

The urine was light amber in color, hazy, acid in reaction, had a specific gravity of 1.057, was free from albumin, and gave a slight reaction for sugar with Fehling's solution. With Benedict's solution the copper was reduced in an amount that was estimated as representing about 0.25 per cent. of sugar. The polariscope showed 8.5 per cent. of a dextrorotary substance. The patient was requested to send a twenty-four hour specimen of urine and was instructed how to collect it. On its arrival the amount was 650 c.c.; it was slightly cloudy, acid in reaction, and had a specific gravity of 1.060. The urine contained the faintest possible trace of albumin, no acetone, no diacetic acid and no indican. Tests for sugar showed a negative reaction with Benedict's solution and Nylander's solution. The polariscope showed 11.25 per cent. of a dextrorotary substance. After inversion by heat and acid, copper was reduced and the polariscope showed 3.9 per cent. of a levorotary substance. Rotating substances other than sugars having been excluded, it was clear that the substance originally present in the urine was sucrose, and that inversion had transformed it into dextrose and levulose, the latter preponderating and causing the levo rotation. A catheterized specimen of urine was obtained. This specimen was absolutely free from sugar of any kind, as were subsequent and specimens obtained by catheterization. It was evident then that the patient was not suffering from diabetes mellitus, but that she had purposely added sucrose to the urine in order to simulate this disease. The psychology underlying this deliberate deceit was not perfectly clear. The patient was not hysterical. She was distinctly neurotic, and had been known on one previous occasion to feign illness in order to compass certain aims in connection with her family life. This was probably the explanation of the simulated diabetes, though the family physician could not discover what particular object the patient had in view.

Canadian Medical Association Journal, Toronto

December, 1915, V, No. 12, pp. 1045-1128

45 Medical Profession and War — Cancer Problem. W. H. B. Aikins, Toronto.
46 Aids in Diagnosis of Surgical Conditions of Stomach. J. W. Dewis, Boston.
47 Antityphoid Inoculation. F. W. Schofield, Ontario.
48 Influenza Meningitis; Report of Two Cases. A. Brown, Toronto.
49 Case of Cholelithiasis and Chronic Valvular Disease. E. M. von Eberts, Montreal.

Florida Medical Association Journal, Jacksonville

December, 1915, II, No. 6, pp. 161-192

50 Supraclavicular Brachial Plexus Block. J. K. Simpson, Jacksonville.
51 Surgery of Hemorrhoids. R. Duffy, Tampa.
52 Surgical Treatment of Prolapse of Uterus. T. S. Field, Jacksonville.
53 Diagnosis of Insanity. H. Crenshaw, Atlanta, Ga.

Iowa State Medical Society Journal, Des Moines

December, 1915, V, No. 12, pp. 507-546

54 What Is the Matter with Us? J. E. Luckey, Vinton.
55 Pelvic Neoplasms in Pregnancy. L. H. Branson, Iowa City.
56 Surgical Complications of Typhoid. V. B. Knott, Sioux City.
57 Diseases of Eye and Ear as Influenced by General Conditions or Diseases of Other Organs. F. F. Agnew, Independence.
58 Degenerative Changes in Uterus. A. P. Donohoe, Davenport.

Journal of Abnormal Psychology, Boston

December-January, X, No. 5, pp. 297-368

59 Sex Worship and Symbolism of Primitive Races. (To be concluded.) S. Brown, Boston.
60 Psychanalytic Treatment of Hystero-Epilepsy. L. E. Emerson, Boston.
61 Genesis and Meaning of Tics. M. Solomon, Chicago.

Military Surgeon, Chicago

December, 1915, XXXVII, No. 6, pp. 523-653

62 Relation of Army Medical Corps and Medical Reserve Corps to Medical Corps of Organized Militia. W. O. Owen, U. S. Army.
63 Sanitary Troops — State and Federal. J. H. Ulrich, Md. N. G.
64 Medical and Sanitary Department of Japanese Army. H. L. Hawthorne, U. S. Army.
65 Syphilis as Cause of Mental Disease in Military Service. L. L. Smith, U. S. Army.
66 Military Delinquent. E. King, U. S. Army.
67 Case of Gunshot Wound of Abdomen with Immediate Operation. G. M. Van Poole, U. S. Army.
68 California Law Relating to Discharged Surgeons of Army. L. W. Lord, U. S. Army.
69 Hospital Treatment of Acute Gonorrhea. H. C. Maddux, U. S. Army.

Ophthalmic Record, Chicago

December, 1915, XXIV, No. 12, pp. 601-654

70 Focal Infections in Their Relation to Certain Disorders of Uveal Tract. G. E. de Schweinitz, Philadelphia.
71 Ocular Diseases Resulting from Dental Lesions. A. D. Black, Chicago.

72 Method of Study of General Diseases in Their Relation to Ocular Structures. M. M. Portis, Chicago.
73 Fundus Lesions in Various Forms of Nephritis. A. E. Bulson, Jr., Fort Wayne, Ind.
74 Trial-Case Accessory. J. W. Downey, Jr., Baltimore.
75 Dionin in Treatment of Vernal Catarrh. G. Swift, Seattle, Wash.
76 New Nasal Punch. A. E. Prince, Springfield.

Philippine Journal of Science, Manila

September, 1915, X, No. 5, pp. 309-356

77 *Rôle Played by Insects of Dipterous Family Phoridae in Spread of Bacterial Infections. D. N. Roberg, Manila.
78 Beriberi. R. R. Williams and J. A. Johnston, Manila.
79 Pseudotyphoid in Deli, Sumatra (Variety of Japanese Kedani Fever). W. Schüffner.

77. Rôle Played by Insects in Spread of Bacterial Infections.—*Aphiocheta ferruginea* is a species of fly which breeds in human feces, and is the commonest of the small flies which breed therein. Its period of development is from nine to ten days, and eggs are laid when the fly is 5 days old. Their minute size enables them to pass through the ordinary fly-proof screens used as prophylactic means against the invasion by the common house fly and other large species of Diptera. These flies, Roberg says, may serve as agents in the dissemination of Asiatic cholera and other alimentary infections. Fly-proof wire-screen bell jars employed in restaurants, kitchens and tiendas to protect food against the common house fly do not exclude the *Phoridae*. Fly-proof sanitary pails which are ordinarily used for the deposit of human excrement, although proof against the common house fly, may not be secure against invasion by the *Phoridae*.

Public Health Journal, Toronto

December, 1915, VI, No. 12, pp. 593-646

80 Health and Charity. S. M. Gunn.
81 Land Problem in Relation to Housing. P. H. Bryce, Ottawa.
82 Control of Venereal Diseases. W. A. Evans, Chicago.
83 Medical Profession of Ontario vs. Irregular Practitioners. J. W. S. McCullough, Toronto.
84 Defective Children. M. H. Kerr.
85 Auxiliary Classes in Public Schools. M. E. Blackwell.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

December, 1915, XXIII, No. 12, pp. 345-376

86 Psychic and Somatic Palsies Complicating Pregnancy. S. G. Burnett, Kansas City, Mo.
87 Moral Effect of Professional Instruction on Proper Sexual Union. C. S. Pettres, Little Rock.
88 Nitrous Oxid in Obstetrics. J. R. Worley, Dallas.
89 Case of Brain Surgery. C. L. Hall.
90 Can Mortality of Tonsillitis be Reduced? T. L. Higginbotham, Hutchinson, Kan.

Surgery, Gynecology and Obstetrics, Chicago

January, XXII, No. 1, pp. 1-126

91 Restoration of Bile Passage After Serious Injury to Common or Hepatic Ducts. W. J. Mayo, Rochester, Minn.
92 Errors in Anatomic Development; Their Cause and Surgical Significance. C. H. Mayo, Rochester, Minn.
93 Teeth: Importance as an Avenue to Infection. T. B. Hartzell and A. T. Henrici, Minneapolis.
94 *Relation of Amebiasis to Pyorrhea Alveolaris. A. H. Sanford and G. B. New, Rochester, Minn.
95 Deep-Seated Alveolar Infections. M. L. Rhein, New York.
96 Dental Aspect of Relation of Endameba to Pyorrhea Alveolaris. W. A. Price, Cleveland.
97 Intestinal Stasis. A. J. Ochsner, Chicago.
98 Chronic Intestinal Stasis and Its Associated So-Called Toxemia. F. W. Smithies, Chicago.
99 Sanitary Organizations and Surgery in France and Central Empires. K. Connell, New York.
100 Unit Plan of Organization of Medical Reserve Corps of U. S. Army for Service in Base Hospitals. G. W. Crile, Cleveland.
101 *Radical Operation for Carcinoma of Uterus. H. C. Taylor, New York.
102 *Relative Merits of Operations for Cancer of Uterus. D. C. Balfour, Rochester, Minn.
103 Heat in Treatment of Carcinoma of Uterus. J. F. Percy, Galesburg.
104 *Autotransplantation of Corpus Luteum. J. B. DeLee, Chicago.
105 Attempts to Produce Experimentally Conditions of Sympathetic-otonus, Vagotonus and Hyperthyroidism. A. Troell, Stockholm, Sweden.
106 *Tracheloplastic Methods and Results. A. Sturmdorf, New York.
107 Uterine Displacements. A. J. Nyulasy, Pert, Western Australia.
108 Abuse of Pituitary Extract. G. C. Mosher, Kansas City, Mo.
109 Double Nuchal Displacement of Arms in Footling Presentation, with Breech Anterior, Chin Caught Above Symphysis Pubis. G. G. Copeland, Toronto, Canada.
110 *Self-Retaining Drainage Tubes. A. M. Vance, Louisville, Ky.
111 Zigzag Purse-String Suture for Gallbladder Work. W. H. Williams, Lebanon, Ind.
112 *Improved Substitute for Iodized Catgut Sutures. C. H. Watson, Brooklyn.

94. Relation of Amebiasis to Pyorrhea Alveolaris.—Sanford and New found *Endameba buccalis* in at least 14 per cent. of mouths free from gingival irritation, and in relatively increasing numbers in accordance with the degree of pyorrhea. They claim that clinically there is no parallelism between the presence of *Endameba buccalis*, the parasite ameba of the mouth, and *Endameba histolytica*, the cause of amebic dysentery. The authors believe that before the alkaloids of ipecac can be accepted as the cure of pyorrhea alveolaris it must be established that they actually destroy the amebae in the mouth, thus removing the cause of the disease. Experiments convince them that *Endameba buccalis* and *Endameba histolytica* are not the same organism. They also hold that before *Endameba buccalis* is called the cause of pyorrhea alveolaris its pathogenicity must be demonstrated by animal experimentation.

101. Radical Operation for Carcinoma of Uterus.—Taylor's treatment of carcinoma of the cervix uteri is as follows: For the favorable case, that is, a patient in a good general condition, an abdominal wall without an excess of fat, and no associated pelvic lesion to increase the operative risk, and a limited growth, he advises the radical operation. For a limited growth in a patient who is a bad risk on account of general or local conditions he advises usually a simple abdominal hysterectomy, occasionally a vaginal hysterectomy. For the so-called inoperable case, he advises radium, Roentgen rays and the cautery.

102. Merits of Operations for Cancer of Uterus.—Summary of the present status of operative procedures for cancer of the uterus in the Mayo Clinic as given by Balfour: 1. Patients with cancer of the cervix not too far advanced and who are good surgical risks should be treated by thorough cautery sterilization of the local disease in the cervix, and total abdominal hysterectomy of the Wertheim type. 2. When cancer is confined to the cervix, the vaginal outlet fairly lax, and the patient is a poor surgical risk, namely, obese, with cardiorenal disease, etc., the preferred treatment is the clamp and cautery vaginal hysterectomy. 3. In the more advanced stages of the disease if the patient is a good surgical risk the two-stage operation should be done, namely, the Percy method of tissue coagulation by heat, followed after some weeks by total abdominal hysterectomy. If the patient is a poor surgical risk the Percy method should be applied, but the abdominal hysterectomy should be considered on its merits in the individual case. In most instances in cancer of the body of the uterus a total abdominal hysterectomy should be done. In the small minority of patients with cancer of the body of the uterus who are poor surgical risks, clamp and cautery vaginal hysterectomy may be indicated. These observations are based on a review of 634 cases of cancer of the uterus operated on during the past ten years.

104. Autotransplantation of Corpus Luteum.—DeLee reports two cases. Both women complained of nausea and vomiting for several days after operation. In neither case was the implanted body palpable in the broad ligament at a later operation. There was no mass at the site of implantation.

106. Tracheloplastic Methods and Results.—The steps of the procedure advocated by Sturmdorf are as follows: 1. Outlining and free mobilization of an ample circular flap from the vaginal coat of the cervix. 2. Complete excision of the entire cervical mucosa to the internal os, with preservation of its peripheral muscular layers. 3. Sutural coaptation of the vaginal cuff to the denuded cervical cavity. The main object in the first step is the formation of an ample mobile cuff of vaginal mucosa. The edge of vaginal covering thus outlined is freely mobilized by blunt dissection from its underlying tissues, completely around the entire cervix, up to the level of the internal os, exposing the circular arteries

as for high amputation. The pouting everted cervical mucosa is now circumcised and cored out of its muscular bed as a hollow cone, leaving a raw funnel-shaped cavity. Trimming the loose vaginal cuff to serve as an accurate lining to the interior of this muscular funnel, its retention in this position is secured by sutures. By tightening each individual set of suture ends, the flap segments are drawn into the cervix, line its whole cavity with vaginal mucosa, the edge of which is thus approximated to the circumference of the internal os, where it is retained in apposition as long as desired.

110. **Self-Retaining Drainage Tubes.**—Vance's preparation of these tubes is as follows: Select a pure rubber tube of the proper size, cut it 2 inches longer than required for the wound or cavity to be drained, and make as many fenestra in the distal portion as desired. About 2 inches from the proximal end make two horizontal openings, by snipping with scissors, sufficiently wide to accommodate the tongues next to be described. With scissors, split the proximal end of the tube to within half an inch of the horizontal openings already described, and make a tongue tapering slightly from tip to base, on each side. Insert small hemostatic forceps through the horizontal opening and grasp the tip of the tongue, pulling it downward into the tubal lumen and outward through the opening until the base or wider portion fits snugly into the aperture. When both tongues have been thus drawn through the horizontal openings, the result will be a tube the lumen of which has not been reduced in the slightest although the rubber is double for a quarter of an inch proximal to the tongues. When the tube is inserted into the wound or cavity to be drained, it is so placed that the two tongues forming the arms of the "T" are at right angles to the incision and flat on the external surface of the body. These arms are then held in position against the body surface by narrow strips of adhesive plaster, over which the outer dressings are applied.

112. **Substitute for Iodized Catgut Sutures.**—Watson claims that potassium mercuric iodid, in alcoholic solution in a dilution of one to one thousand, has more than ten times the germicidal efficiency of one to one hundred solution of iodin in alcohol. The impregnation of catgut sutures with potassium mercuric iodid, by increasing the tensile strength of the gut, offers a distinct advantage over the similar use of iodin. Catgut sutures impregnated with potassium mercuric iodid, when sealed in tubes with chloroform, show no deterioration when the tubes are subjected to boiling. Since iodized sutures are ruined by such treatment, the superiority of potassium mercuric iodid over iodin as a germicidal impregnating agent is obvious.

Tennessee State Medical Association Journal, Nashville

December, 1915, VIII, No. 8, pp. 339-382

113 Comparative Study of Diagnostic Tests for Syphilis. W. Krauss, Memphis.
114 Morphin-Hyoscin Analgesia in Labor; Report of Cases. J. W. Brandau, Clarksville.
115 Medical Organization — County Medical Society. J. G. Rawlins, Dancyville.
116 Medical Society and Its Officers. H. P. Larimore, Chattanooga.
117 Ectopic Pregnancy. T. G. Pollard, Nashville.
118 Dental Sepsis. J. Witherspoon, Nashville.
119 Psoriasis. G. R. Jones, Orlinda.
120 Duodenal Ulcer. J. S. B. Woolford, Chattanooga.

Texas State Journal of Medicine, Fort Worth

December, 1915, XI, No. 8, pp. 413-460

121 Neurologic Cases in Practice of Ophthalmology and Otology. J. C. Beck, Chicago.
122 Origin of Certain Neuroses. R. H. Gough, Fort Worth.
123 Recognition of Early Symptoms of Nervous Diseases in Life Insurance Work. J. S. Turner, Dallas.
124 Plea for More Thorough Examination of Patients Suffering from Symptoms of Early Pulmonary Tuberculosis. S. E. Thompson, Carlsbad.
125 Suspension Laryngoscope (Killian); Its Aid in Treatment of Tuberculous and Syphilitic Lesions of Larynx. S. Israel, Houston.
126 Case of Pneumonia Complicated by Meningitis. A. D. Patillo, Electra.
127 Ectopic Gestation; Report of Cases. J. E. Gilcreest, Gainesville.
128 Stricture of Rectum. C. S. Venable, San Antonio.
129 Injuries of Back from Medicolegal Standpoint. H. D. King, New Orleans.

United States Naval Medical Bulletin, Washington, D. C.

January, X, No. 1, pp. 1-189

130 *Technic for Absorption Test for Syphilis, Using Human Complement. C. S. Butler and W. F. Landon, U. S. Navy.
131 Early Diagnosis of Tuberculosis as it Relates to Service and to Naval Hospital at Las Animas, Colo. G. H. Barber, U. S. Navy.
132 Studies Pertaining to Light on Shipboard. T. W. Richards, U. S. Navy.
133 Military Organization and Equipment in Present War. A. M. Fauntleroy.
134 Classification of Mental Diseases. R. Sheehan, U. S. Navy.
135 Second Report on Schier Test for Mentality, with Special Reference to Point System. G. E. Thomas, U. S. Navy.
136 Treatment of Fractured Mandibles. F. L. Morey, U. S. Navy.
137 Diving Operations in Connection with Salvage of U. S. Ship "F-4." G. R. W. French, U. S. Navy.
138 Report on Recovery, Identification and Disposition of Remains of Crew on "F-4." W. Seaman, U. S. Navy.
139 Simple Test of Sterilizer Efficiency. E. Thompson, U. S. Navy.
140 Horizontal Fluoroscope and Illuminating Box Made in Naval Hospital. H. L. Gall, U. S. Navy.
141 Creeping Eruption; Report of Case. J. C. Parham, U. S. Navy.
142 Sporadic Case of Typhus. R. G. Davis, U. S. Navy.
143 Branchiogenic Cyst. L. W. Johnson, U. S. Navy.
144 Bilateral Thrombosis of Central Retinal Veins. S. Walker, Jr., U. S. Navy.
145 Internal Hernia; Report of Case. W. C. Espach, U. S. Navy.
146 Case of Psoriasis Limited Almost Exclusively to Scalp. J. H. Harris, U. S. Navy.
147 Handy Electrical Appliance for Sick Baby. A. Farenholt, U. S. Navy.

130. **Test for Syphilis.**—Butler and Landon describe a test which is in part like that of Noguchi and in part like that of Emery, and in which human complement instead of that of the guinea-pig is employed, quite as satisfactory as either the straight Wassermann or the Noguchi tests. As between the Noguchi and the present technic the results were in agreement in 292 cases out of 300. There were eight discrepancies, and of these, three were in the serums of men undergoing treatment, and in the fading reaction one or the other test would persist as positive longer than the alternate one. There is nothing new in this test. Emery used patient's serum for complement, but whereas he allowed each patient's serum to complement his (the patient's) own particular reaction, this test uses the serum of a known negative reacting human being for all the tests. Amboceptor paper (antihuman rabbit), antigen and other points of the test are as in Noguchi's technic, but with reduced amounts.

West Virginia Medical Journal, Wheeling

December, 1915, X, No. 6, pp. 181-216

148 Cancer Problem. A. Arkin, Morgantown.
149 Stone in Kidney and Ureter. S. S. Gale, Roanoke, Va.
150 Report on Sanitation. C. Wingerter, Wheeling.
151 New Public Health Law. W. W. Golden, Elkins.
152 Uterine Prolapse. I. Hardy, Morgantown.

Wisconsin Medical Journal, Milwaukee

December, 1915, XIV, No. 7, pp. 261-302

153 Workmen's Compensation Act of Wisconsin from Viewpoint of Insurance Companies. A. B. Rosenberry, Wausau.
154 Relation of Physician to Compensation. C. H. Crownhart, Madison.
155 Traumatic Hernia and Traumatic Orchitis in Relation to Workmen's Compensation. A. H. Levings, Milwaukee.
156 Borderline Cases Under Workman's Compensation Act. E. Quick, Milwaukee.
157 Unusual Case of Lateral Sinus Thrombosis. G. F. Zaun, Milwaukee.
158 Juvenile Hyperthyroidism. A. L. Kastner, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Dec. 25, 1915, II, No. 2869, pp. 913-948

1 Wounds in War. A. Bowlby.
2 *Iodin and Sodium Hypochlorite as Wound Disinfectants. H. Schütze.
3 *Quinin Hydrochlorid Dressing for Infected Wounds. K. Taylor.
4 Cases of Traumatic and Arteriovenous Aneurysm. F. L. A. Greaves.
5 Arteriovenous Aneurysm; Anastomosis of Vein and Suture of Artery. H. J. Godwin.
6 Character and Treatment of Frost-Bite. H. E. Munroe.

2. **Iodin and Sodium Hypochlorite as Disinfectants.**—The organisms used by Schütze in his experiments were *Staphylococcus aureus* and *B. edematis maligni*, as examples of the

sporing and nonsporing groups; and, as a test of the efficiency of the disinfectant in the presence of organic matter, in one series disinfection was carried out on bacteria suspended in distilled water; in another series on bacteria suspended in sheep serum. The following tables show the results of this work:

Disinfectant	Environment	14.5 Million Staphylococci per c.c. at 22 C.	
		Are Not All Killed After	Are All Killed After
0.0015 per cent. iodin	Distilled water ...	.....	2 minutes
0.125 per cent. iodin	50 per cent. serum	16 minutes	32 minutes
1.0 per cent. phenol	Distilled water ...	16 minutes	33 minutes
1.0 per cent. phenol	50 per cent. serum	32 minutes	.....
1.5 per cent. phenol	50 per cent. serum	3 minutes	16 minutes
1.75 per cent. phenol	50 per cent. serum	4 minutes	8 minutes

Disinfectant	Environment	102 Million Malignant Edema Spores at 19 C.	
		Are Not All Killed After	Are All Killed After
Dakin's solution, diluted one-half, containing 0.1685 per cent. NaClO	Distilled water ...	.....	¼ hour
Id.	50 per cent. serum	5¼ hours	.....
5 per cent. iodin....	Distilled water ...	1½ hours	2 hours
5 per cent. iodin....	50 per cent. serum	2 hours	3¼ hours
10 per cent. iodin...	Distilled water ...	¾ hour	1 hour
5 per cent. phenol..	Distilled water ...	8 days	.....

3. **Quinin Hydrochlorid Solution as Dressing.**—The majority of the cases reported on by Taylor were subjected to wet dressings of a 1 per cent. solution of quinin hydrochlorid in cold boiled water. The same solution has been used for instillation. In about twelve cases a continuous drip of 1/10 per cent. solution of quinin hydrochlorid, with the addition of 1/10 per cent. of hydrochloric acid or of 1 per cent. of alcohol, has been used. In addition to these procedures, a few patients received hypodermic injections into the tissues about the wounds of the same solution as that used for wet dressings. About 125 cases of infection were treated with one of these solutions. These cases have been for the greater part fairly fresh wounds, having usually been received within forty-eight hours of injury. Most of them (70 per cent.) have been heavily infected with the gas bacillus, and all with staphylococci, streptococci, and the usual flora or putrefactive bacteria. About one half had open fractures of long bones of arm or leg. Most of the wounds treated with quinin solution have run a favorable course. There has been a rapid improvement in the appearance of the wound itself, manifested by the speedy disappearance of the sloughs, by the vanishing of the putrefaction odor (frequently within twenty-four or forty-eight hours), by a marked decrease in the discharge, and by the unusually rapid appearance of red vascular granulations. Nearly all of the most serious wounds show heavy mixed infections. Ten patients were treated with dressings other than quinin; the treatment was continued for a number of days and then changed to the quinin solution. All of them showed sudden improvement associated with the change. In three instances there was an almost immediate drop in temperature coincident with a marked improvement in the appearance of the wound.

Journal of Tropical Medicine and Hygiene, London

Dec. 15, 1915, XVIII, No. 24, pp. 277-288

7 Herpetomonads and Vertebrates. H. B. Fantham.
8 Fever Due to Bacterium Columbense (Castellani 1905). E. C. Spaar.

Lancet, London

Dec. 25, 1915, II, No. 4817, pp. 1385-1436

9 Wounds in War. A. Bowlby.
10 Functional Nerve Disease and Shock of Battle. D. Forsyth.
11 Another Human Coccidium from Mediterranean War Area. C. M. Wenyon.
12 Bactericidal Effect Exerted in Vitro by Ethylhydrocuprein (Optochin) Hydrochlorid on Fecal Streptococcus Obtained from Wounds. A. C. Inman.

Bulletin de l'Académie de Médecine, Paris

Dec. 14, 1915, LXXIV, No. 50, pp. 707-768

13 *Prizes Offered for 1916, 1917 and 1918. R. Blanchard, Secretary.

December 7, No. 49, pp. 663-706

14 *Tetanus Localized in Leg. E. Laval and Pozzi.
15 Circulars for Prevention of Avoidable Diseases. (Sur la distribution, dans l'armée, de notices relatives à la prophylaxie des maladies évitables.) Letulle and others.
16 Importance of Milne's Method of Prophylaxis of Scarlet Fever. (Sur la prophylaxie de la scarlatine.) Chantemesse.
17 Fiftieth Anniversary of Villemin's Announcement of the Specific and Contagious Virulence of Tuberculosis. (Le cinquantenaire, à l'Académie de Médecine, de la démonstration expérimentale de A. Villemin, sur la virulence spécifique et contagieuse de la tuberculose.) L. Landouzy.
18 Tardy Abscess of the Brain from Projectile; Recovery after Operation. M. Mendelsson.
19 Necropsy Shows Evidence of Regeneration of Spinal Nerve Fibers after Crushing of Spinal Cord. G. Roussy and J. Lhermitte.
20 *Mild and Unrecognized Forms of Malaria. (Les formes légères et méconnues du paludisme.) P. Sainton.
21 Iodized Vaccines against Typhoid and Paratyphoid. (L'immunité spécifique et l'immunité de groupe obtenue contre les bacilles typhiques et paratyphiques A et B par les vaccins iodés.) A. Ranque and C. Senez.

13. **Prizes Offered by the Académie de Médecine.**—The list of prizes offered during the next three years totals over 130, and all but seven are open to international competition. The competing articles for thirteen of the prizes must be sent in anonymously, the name in a sealed envelope. For five of the prizes only printed works can compete. Full details are given in the *Bulletin*. The prizes range from $60, $600, $1,060 and $2,100 up to the Audiffred prize representing an endowment yielding an income of $4,800 at 3 per cent., the whole endowment to be given for a sovereign cure for tuberculosis.

14. **Localized Tetanus.**—This subject was discussed in the Paris Letter, Jan. 15, 1916, p. 204.

20. **Malaria in Paris Troops.**—The five men were from the Paris district and had never been in the tropics, but for some months had been on active trench service in the marshes of Flanders. The discovery of the malaria plasmodium in the blood explained the puzzling syndrome in these and in a number of other cases at the front. (See also Paris Letter, p. 290.)

Paris Médical

Dec. 4, 1915, V, No. 30, pp. 525-540

22 Pensions for the Wounded and the Cripples Left by the War. (Les pensions aux blessés et aux invalides de la guerre.) Chavigny.
23 Goggles to Ward Off Minor Wounds of the Eyes. (Prophylaxie des blessures du globe oculaire.) F. Terrien and G. Cousin.
24 *The Bottle Spiroscope for Exercising the Respiratory Apparatus. (L'entrainement respiratoire par la méthode spiroscopique; ses applications aux malades et aux blessés.) J. Pescher.

24. **Spiroscope for Respiration Exercises.**—Pescher's spiroscope is based on the principle that a bottle of water turned upside down in a pail of water will not empty itself even if the cork is removed. He uses a graduated bottle and has the patient blow into it through a tube low down in the bottle. The patient can see the bubbles as his breath enters the bottle, and can gage his respiratory capacity by the amount of water he is able to displace in a given time. The patient gets interested in the task as he watches the bubbles of his breath, and surprising benefit is realized in old cases of emphysema, bronchitis, etc., after wounds of the chest, and in hastening recovery from acute affections of the air passages.

Presse Médicale, Paris

Dec. 13, 1915, XXIII, No. 61, pp. 497-504

25 Surgery in France during the Last Fifty Years. (La chirurgie française dans les cinquante dernières années.) J.-L. Faure.

December 16, No. 62, pp. 505-512

26 Clinical Diagnosis of Exaggeration and Perseveration of Functional Nervous Troubles. P. Sollier.
27 *Prophylaxis of Traumatic Talipes Equinus. (Pieds bots équins traumatiques précoces.) P. Hardouin.

December 23, No. 63, pp. 513-520

28 Progress of Obstetrics in France during the Last Fifty Years. (La médecine française en ces cinquante dernières années: VI. Obstétrique.) C. Jeannin.

27. **Prophylaxis of Traumatic Talipes Equinus.**—Hardouin has encountered a number of cases in which, after a bullet had passed through the calf, the disturbances were so slight that the men were soon on their feet. The traction on the wound, however, caused pain, and in order to prevent this the foot was held in an abnormal position—actual talipes equinus, and as these men were known to be mildly wounded they did not get the medical supervision of the other wounded. But the deformed attitude of the foot soon became permanent, and they were left cripples unless the deformity was noticed and corrected in time. If they were allowed to use crutches, permanent crippling was almost inevitable. Men with wounds in the legs should not be allowed to be on their feet until the wound is entirely healed. Disregard of this principle makes the healing drag for weeks longer than it should. When they are allowed to walk, the position of the foot should be kept normal, and it should be exercised only a very little at first. Massage is seldom useful, but a plaster cast may be needed in grave cases.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Nov. 20, 1915, XLV, No. 47, pp. 1473-1504

29 *Renal Hematuria from Overexertion. (Nierenbluting durch Ueberanstrengung.) L. Lifschitz.
30 Advantages of Outdoor Reclining in Mountain Climate. (Liegekuren im Hochgebirge.) O. Amrein.

November 27, No. 48, pp. 1505-1536

31 *Improved Outlook for Treatment of Hemophilia, Purpura, etc. (Ueber vergleichende Blutplättchenuntersuchungen.) A. Fonio.
32 Postoperative and Other Reflex Anurias. (Klinische Beiträge zur Kenntniss der Anurie.) M. Grechen.

December 4, No. 49, pp. 1537-1568

33 Modern Treatment of Fractures. A. Ziegler.
34 *Pulmonary Tuberculosis among the Jews. (Ueber das Verhalten der Lungentuberkulose bei den Juden.) S. Kreinermann.
35 *Comparative Study of the Blood Platelets. (Ueber vergleichende Blutplättchenuntersuchungen.) A. Fonio.

December 11, No. 50, pp. 1569-1600

36 *Rachitic Muscle Disease. (Myopathia rachitica.) E. Baumann.
37 *The Cycle of the Uterus Mucosa. (Le cycle de la muqueuse utérine.) D. Christides and P. Besse.
38 *Hematuria from Physical Overexertion. (Ueber Nierenblutungen durch Ueberanstrengung.) Wildbolz.

December 18, No. 51, pp. 1601-1632

39 Abdominal Pain in Soldiers as Manifestation of Irritation of the Dorsal and Lumbar Spinal Cord. (Ueber Abdominalschmerzen.) A. Jaquet.
40 *Study of the Coagulation of the Blood. (Zur Methodik gerinnungsphysiologischer Studien.) R. Klinger.

29. **Hematuria from Overexertion.**—Lifschitz has found only one case on record in which hematuria was brought on by long standing or walking, but he has encountered recently two such cases in his own experience. Hematuria following competitive athletics is more common. Von Leyden first reported a case of hemorrhage from the bladder with great malaise and dysuria in a young man after a hard ride on horseback. All symptoms had disappeared by the end of two weeks, and there has never been any further trouble from the kidneys. Lifschitz cites the details of ten other similar cases from the literature, the hemorrhage being more or less acute, but all terminating in complete recovery. His own two patients were a teacher of 40 and a medical student, and he himself presented a third case, the hematuria coming on each time after long walking or standing on military service. This makes a total of fourteen cases of hemorrhage after physical stress with apparently sound kidneys in healthy men. The hemorrhage occurs without any warning signs, and may be brief or it may keep up for several days. Recurrence is known in only two cases, but Fürbringer has reported a case in which the hematuria recurred after every long ride. The hemorrhage was never enough to induce anemia, and there was no pain or malaise as a rule. Lifschitz thinks that the products of metabolism accumulated during the physical exertion force their way through the kidneys and induce the hematuria, although the kidneys may be entirely sound. Renal hematuria may be induced by the toxic action of drugs, but he thinks that in his cases it was evidently from the toxic action of fatigue poisons.

31. **Individualizing and Effectual Treatment of Disease of the Blood.**—Fonio remarks that the prevailing methods of testing the coagulating property of the blood give no information as to the causes of the delay in coagulating. He describes a method which reveals the exact factors involved, and apparently opens up a wide field for future research on the blood. Although the technic is still imperfect, yet it already throws light on the nature of hemophilia, purpura, etc., and suggests effectual treatment. He calls it the *separierende Methode* as it aims to determine which of the elements of the blood is lacking in the individual case. It opens a brighter prospect for transfusion of blood in diseases of the blood, as it enables us to select and apply in transfusion the one or more elements needed, leaving out the other elements which are merely undesirable ballast.

We know that coagulation is the result of the release of thrombozym by the destruction of the blood platelets. It combines with the thrombogen to form thrombin, while the latter—in the presence of calcium salts—acts on the fibrinogen and from this action fibrin results. If any one of these four factors is lacking—either blood platelets (thrombozym) thrombogen, fibrinogen or lime—coagulation is retarded. Hence it is important to isolate and examine each of these elements separately. This he accomplishes approximately by the use of hemophilic or other similarly slowly coagulating blood as an index, applying the blood to be tested to this index blood, and noting the effect on it. He records the coagulation time in three phases, represented by a dotted line, a heavy black line and another dotted line. The first represents the time that elapses before there is a trace of coagulation, the heavy black line the period from the first traces to complete coagulation. The second dotted line represents the period of retraction of the clot. By this graphic method comparative study of each case is facilitated, as he shows by a number of examples, the relative lengths of the lines showing which of the four elements isolated is most at fault. He recalls that it is a simple matter to isolate the blood platelets. Two drops of a suspension of the platelets from patients with purpura or exophthalmic goiter or healthy controls were added to six drops of blood from a hemophiliac. The length of the various lines in each test shows at a glance that purpura platelets behaved like normal platelets. Equal amounts of each in separate tests compel the hemophilic blood to coagulate within normal range. His further tests apparently demonstrated that hemophilic blood contains normal proportions of platelets but that they are qualitatively insufficient. In purpura, on the other hand, the platelets are qualitatively normal but are present in insufficient numbers. Six tables and two heavy-line diagrams show the findings in his research. When the blood is deficient in thrombozym, it can be brought up to normal by injection of blood platelets (Fonio's "coagulen") without injecting unneeded elements along with them, as in transfusion of the whole blood. He can already report the cure in this way of two newborn with melena, the arrest of hemophilic hemorrhages, and a favorable influence on hemorrhagic diatheses. It has to be given on the same principles as organotherapy for permanent benefit. (A. Fonio is the physician-in-chief of the Langnau district hospital, and he is also connected with the university surgical clinic at Bern in charge of Prof. T. Kocher.)

34. **Pulmonary Tuberculosis Among Jews.**—Kreinermann cites data from various countries which demonstrate two facts that apparently contradict each other, namely, (1) that the Jews, more than other peoples, present a physical predisposition to pulmonary disease; their sedentary mode of life and overcrowded homes also invite it, but (2) they show everywhere a considerably lower morbidity and mortality from pulmonary tuberculosis than are found in the rest of the population. He cites series of convincing statistics in this line. A number of factors cooperate in this, among them, as he explains, the absence of abuse of alcohol. Many prominent clinicians say they have never encountered a case of

delirium tremens in a Jew. But the most influential factor is probably an acquired immunity. For sixty generations the Jews have lived in crowded quarters in cities and, he says, they paid the penalty of their urbanization centuries ago. Pulmonary tuberculosis raged rife among them then and swept off the frail, leaving the sturdy and resistant, and the immunity thus acquired is sustaining them in our generation. Another factor may be their ritual frequent washing of hands and cleaning up of the premises before the Sabbath. Last but not least, is the high estimation placed on the services of the physician. To visit the sick and seek to help each individual case in every way is part of their religion, and thanks to this the sick obtain medical attendance at an earlier stage than is common elsewhere. Consequently tuberculosis is recognized in its incipiency and gets a better chance to be stamped out.

35. **The Blood Platelets and Renal Hematuria After Overexertion.**—Fonio replies to the article by Lifschitz summarized in abstract 29 above. Fonio thinks that the cases of hematuria reported by the latter must be regarded as instances of latent purpura. The kidneys being normal, the source for the hemorrhage must be sought elsewhere, and most probably it was an insufficiency on the part of one of the four elements which participate in the coagulation process. This insufficiency remains latent until it is revealed during some period of extra physical exertion with its excessive production of waste and fatigue toxins, and the consequent overloading of the circulation with them. He urges examination of the blood and especially of the behavior of the blood platelets and coagulation time as a routine procedure in all cases of hematuria from sound kidneys. We know that intestinal hemorrhage is liable to occur in leukemic conditions and in the jaundice of the newly born, and that profuse, recurring uterine hemorrhage may also be due to certain constitutional affections—all of which might be elucidated and possibly successfully treated by detection and the remedying of the deficiency in some element of the coagulation process. Fonio's study of this subject is summarized in abstract 31 above. He cites here in conclusion a case of epidemic meningitis in which hematuria followed lumbar puncture each time during a certain stage of the disease.

36. **Rachitic Disease of the Muscles.**—Baumann reviews the recent literature on this subject and on the differential diagnosis, and reports in detail a case from his own practice in a 2 months' babe. The acute onset of the muscle trouble and the febrile course in the first few weeks suggested acute polymyositis at first. There was profuse sweating, particularly of the head, but appetite and stools were normal and there was no vomiting. The child's arms hung loose as if paralyzed, but it could move its fingers. The epiphysis in both forearms was unduly thick and a bunch was felt on the bone 3 cm. above the left elbow which roentgenoscopy showed to be a rachitic, lime-free osteoid bunch. The child screamed when the arms were grasped, but did not mind mere contact. The tendon reflexes were normal or exaggerated. The electric excitability of the muscles involved was considerably reduced, but there was always lightninglike twitching, and no reaction of degeneration.

Improvement was soon manifest under phosphorus (0.01 part phosphorus to 100 parts emulsion); one teaspoonful fractioned during the day. The feedings were restricted to milk with two parts thin rice gruel, to a total of 170 gm. a day. The child had been given flour gruel, but this was stopped. In less than a week the wrist could be moved and by another week one arm was functioning normally. By the end of the month the child had regained the use of its arms and the bunch in the arm had retrogressed. The phosphorus was kept up for a few weeks longer, half a teaspoonful of the emulsion, three times a day. Then for two weeks it was suspended, and the twelfth day thereafter the left arm hung loose again—evidently a tendency to relapse after the phosphorus had been eliminated. It was resumed again, and the benefit was apparent the sixth day. He adds that the emulsion of phosphorus is borne better by very young children than when combined with cod liver oil.

37. **The Uterine Cycle.**—Christides and Besse examined scraps taken from the uterus mucosa twice each week during four or five weeks, the scraps taken each time from a different place but all examined by the same staining and microscopic technic. He urges others to conduct research along similar lines for comparison, as one case is not conclusive.

38. **Renal Hematuria from Overexertion.**—See abstract 35 above. Wildbolz also takes exception to Lifschitz' statements in regard to "hematuria from sound kidneys," saying that not until the kidney has been examined in sections from end to end under the microscope is one justified in assuming that it is "sound" when it is the seat of hematuria. Closer investigation, or the course of the case perhaps years later, will reveal some focus responsible for the hemorrhage in nearly every instance, although there are five cases on record in which no focus could be found (Klemperer, Schede, Steinthal, Casper and Schüpbach's case from Wildbolz' service). As a rule, hematuria is the consequence of some serious organic trouble, the prognosis of which grows progressively graver the longer the organic trouble escapes detection. One should therefore never assume that the kidney is sound when confronted with hematuria until after absolute exclusion of organic disease.

40. **The Coagulation Process.**—Klinger writes from Zurich that the blood platelets are not always at fault in hemophilia and similar abnormal conditions of the blood. The trouble lies in the thrombogen. This acts only in the presence of lime salts, and thrombozym is also necessary, the three combining to form thrombin. This with fibrinogen produces the fibrin. Pure, stable solutions of fibrinogen are the best means to study the coagulation process.

Deutsche medizinische Wochenschrift, Berlin

Dec. 9, 1915, XLI, No. 50, pp. 1477-1504

41 Roentgen Localization of Metal Foreign Bodies in the Tissues. (Zur Projektildiagnose.) Albers-Schönberg.

42 *Present Status of Military Surgery. (Ergebnisse der bisherigen kriegschirurgischen Erfahrungen.) H. Matti (Bern). Commenced in No. 48.

43 *Typhoid and Circulatory Disturbances during Convalescence. (Typhus und Zirkulationsapparat.) F. M. Groedel.

44 Isolated Dislocation and Fracture of the Astragalus after Grenade Contusion. A. Harf.

45 *Treatment of Fracture in Young Infants. (Zur Behandlung der Säuglingsfrakturen.) E. Buchheim.

46 Intravenous Salicylic Medication. (Behandlung rheumatischer Erkrankungen mit intravenösen Salizyleinspritzungen.) Rubens.

47 Lime Salts to Hasten Recovery from Frost-Bite. (Kalksalze gegen Erfrierung.) J. Bamberger.

48 Enlightenment and Advice for Patient on Discharge from Sanatorium. (Welche Aufgaben ergeben sich für den Heilstättenarzt aus der Fürsorge für seine Patienten auch nach ihrer Entlassung aus der Anstalt?) Klare.

42. **War Surgery to Date.**—Matti concludes this long review of his impressions to date with the statements that physical or mechanical antisepsis is the main thing for wounds in war, but that chemical antisepsis, cautiously applied, is almost indispensable, at least at first. Exposure to the sun and air of profusely secreting wounds is being adopted more and more, and its superiority is now established beyond question. Phlegmonous conditions do excellently under compresses dipped in a warm 1 per thousand solution of salicylic acid, changed every half hour or hour. Large granulating surfaces do better when the method of treatment is changed often. The tissues become accustomed to a given treatment and it loses all stimulating power.

43. **The Cardiovascular Apparatus in Typhoid.**—Groedel remarks that during the febrile phase of typhoid the pulse seldom is as rapid as in other infectious diseases or as might be expected from the height of the fever. At the height of the disease there may be signs of weakness on the part of the heart, but as a rule they subside without leaving any functional or anatomic disturbance. At the same time, mild prophylactic doses of digitalis may be called for in some cases of typhoid. During the first two weeks after defervescence, bradycardia is frequent, as also thrombosis, but from the third week of convalescence onward the pulse and heart action frequently suggest actual myocarditis. The pulse

becomes soft and small and the beat varies. The blood pressure also fluctuates within a wide range and the auscultation findings are variable. He measured the outline of the heart with orthodiagraphy in several hundreds of cases but found the heart much enlarged in only one instance; there was slight enlargement in 2 or 3 per cent.; 10 per cent. were within the normal range. Nothing was found to indicate injury of the heart muscle, and yet a loud systolic murmur was common, usually accompanied by tachycardia and somewhat higher blood pressure. These were noted in nurses as well as in the soldiers, which excludes poisoning from tobacco or liquor as a probable cause. He noticed further that the men who showed bradycardia soon after defervescence were the ones who developed the tachycardia later.

All this evidence points to some disturbance in the internal secretions, especially in the pancreas, suprarenal and thyroid. At Curschmann's clinic, among seventy-three cases of acute thyroiditis, forty were consecutive to typhoid. Groedel has been treating, on this assumption, his patients with post-typhoid circulatory disturbances, and has been gratified with the results. He gives no details as to his technic.

45. **Treatment of Fractured Femur or Humerus in Infants.**—The difficulties in the way of immobilization and extension for fractures in young infants are obvious, especially the lack of any point of support in the soft little body. Buchheim has obviated these difficulties by fastening the child in a plaster bed and having a wire frame embedded in the plaster. The wire frame projects far enough to serve as a support for traction when extension is applied to the limb. He gives illustrations of two cases; in one the extension was applied to the upper arm for a birth fracture, and in the other for correction of a fracture of the femur that had healed leaving deformity that had required osteotomy. The child can be handled and carried around in its plaster bed.

Münchener medizinische Wochenschrift, Munich

Dec. 14, 1915, LXII, No. 50, pp. 1709-1744

49 Fitness for Service and Right to Pension of Soldiers with Nervous Affections. (Dienstfähigkeit und Rentenfrage bei nervenkranken Soldaten.) P. Jolly.
50 Roentgen Localization of Foreign Bodies in Eye and Orbit. (Zur Lokalisation von Fremdkörpern in Auge und Orbita.) Salzer.
51 *Cure of Syphilitic Polyneuritis under Neosalvarsan. (Beitrag zur Neosalvarsantherapie.) W. Powiton.
52 Circulars Distributed to the Subordinate Medical Officers in the Field. (Merkblätter für Feldunterärzte.) E. Rotter; (Moderne Wundbehandlung und chirurgische Assistenz.) Gebele; (Beginnende Behandlung psychischer Erkrankungen im Felde.) Gudden.
53 *Orthopedics and the Field Hospital. C. Deutschländer.
54 Experiences with After-Treatment of Wounded. (Erfahrung über die Nachbehandlung von Verwundeten und Unfallverletzten.) Rumpf.
55 The Diagnosis and Record of Wounds in War. (Diagnosenstellung bei Kriegsverletzungen.) Lörcher.
56 *Direct Intracardial Injection in Shock from Wounds; Three Cases. (Unmittelbare Einspritzung in das Herz bei hochgradiger Lebensgefahr.) Szubinski.
57 Care of the Stump. (Stumpfrettung unserer Amputierten.) H. Hans.
58 The First Dressing for Compound Fracture of Upper Arm or Thigh. (Der erste Verband bei hochsitzenden, offenen Oberarm- und Oberschenkelbrüchen.) Brix.
59 Apparatus for Loosening Up Stiff Fingers. (Bewegungsapparat für aktive und passive Spreizung und Annäherung der Finger.) Moser.
60 Night Blindness in the Troops Possibly Result of Deficiency in Vitamins. (Avitaminose als Ursache der Nachtblindheit im Felde.) Wietfeldt.

51. **Syphilitic Polyneuritis Subsides Under Neosalvarsan.**—The primary lesion of the syphilis healed under prompt mercurial inunctions but the syphilitic toxins evidently remained in the organism and induced a neuritis. It gradually developed into polyneuritis, and treatment with mercury succinimid only seemed to aggravate the neuritis. The young man noticed that he felt weaker after each injection. The known syphilis, the paralysis without sphincter disturbances, the prickling sensations at first, the atrophy and tenderness of the muscles, the abolished reflexes and the tendency to the reaction of degeneration—all suggested neuritis. The Wassermann reaction was negative, but treatment was begun with neosalvarsan. Three intravenous injections were given at eight-day intervals, 0.15, 0.3 and 0.5 gm.; the latter dose was repeated after an interval of fourteen days. He was thus given four injections, supplemented by mild electrotherapy and exercising the muscles. In eight weeks, from absolute helplessness, total paralysis of arms, hands and legs, the young man had regained complete control of his limbs and some of the reflexes had returned.

53. **Orthopedics and the Field Hospital.**—Deutschländer emphasizes that the orthopedic standpoint must be taken from the very first in management of wounds, that is, to aim to reduce the crippling to the minimum. The functioning of artificial limbs depends on the stump, and he gives directions for adapting this to the purpose. He also recapitulates the rules for applying plaster casts so as not to interfere with later functioning. He shows also methods for exercising joints, calling attention in particular to wagon wheels mounted on the walls at the proper height for the joint. They can be used for both active, passive and against resistance exercises, graduating the radius.

56. **Direct Intracardiac Injections.**—Szubinski was unable to save the patients in three cases reported but this experience and research on the cadaver have convinced him that it might prove useful in some cases. He refers to the condition of shock in which stimulants injected subcutaneously and intravenously show no action, although neither the severity of the wound nor the loss of blood is enough to explain the serious condition. He has had a number of men die under such conditions, and as a last resort he injected directly into the heart muscle 2 c.c. of a preparation of digitalis with ten drops of the usual epinephrin solution. There was marked improvement for a few minutes but this subsided. Necropsy revealed fat embolism in the lungs and extreme anemia of all the organs. A second patient in a hopeless condition from an extensive abdominal wound improved materially under three intracardiac injections of 10 c.c. of the digitalis preparation and epinephrin. The heart action kept comparatively good for ten hours before death finally ensued. The third patient had been wounded in the head and conditions were growing worse, respiration slower and slower. An intracardiac injection of 35 c.c. of a mixture of a preparation of strophanthus and epinephrin rendered the pulse at once strong and nearly normal. In none of the cases could the puncture hole in the heart be found at necropsy. In each instance the flagging heart was roused to vigorous work.

Wiener klinische Wochenschrift, Vienna

Dec. 2, 1915, XXVIII, No. 48, pp. 1309-1336

61 Bacteriology of Inflammation of the Gallbladder. (Zur Bakteriologie der Gallenblasenentzündungen.) I. Feldmann.
62 *Positive Typhoid Bacilli Cultures and Agglutination in a Case of Miliary Tuberculosis. M. Blassberg.
63 *Recovery in Apparently Hopeless Case of Epidemic Meningitis after Subcutaneous Injection of Patient's Own Spinal Fluid. (Zur Behandlung der Genickstarre.) L. Stefanowicz.
64 Fatal Gas Embolism with Gaseous Phlegmon. H. H. Schmid.
65 Meningococcus Sepsis. V. Svestka.
66 Traumatic Chylothorax. F. Derganz.
67 The Bacteriologic Laboratory Train. (Das bakteriologische Eisenbahnlaboratorium der österreichischen Gesellschaft vom Roten Kreuz.) L. Arzt.

62. **Typhoid Bacilli Found in Miliary Tuberculosis.**—Blassberg has obtained positive bacteriologic findings typical of typhoid in so many cases of tuberculosis that he thinks the latter must modify the soil to render it more favorable for typhoid bacilli. He describes in detail a typical case with the necropsy findings. There was absolutely nothing to suggest typhoid otherwise. He draws the important practical conclusion that typhoid carriers should be examined for possible latent tuberculosis.

63. **Autoserotherapy of Epidemic Meningitis.**—The robust girl of 16 showed only transient benefit from antimeningococcus serum and the picture of inflammatory internal hydrocephalus developed with a constantly progressive course. As a last resort the fluid obtained by lumbar puncture was exposed in a thin layer to the sunlight for three hours. Two hours' exposure is known to kill the meningococcus. Ten c.c. of the fluid were then injected subcutaneously on each side of the spine along with an intraspinal injection of the antimeningococcus serum. Improvement was soon manifest and

recovery was complete by the third week. Stefanowicz does not know of any case on record in which this autoserotherapy has been applied in meningitis. He adds that it might be possible to inject the fluid without the exposure to kill the meningococci. They are liable to induce gonitis and endocarditis—cases of such are on record—but the autoserotherapy would tend to cure them.

Gazzetta degli Ospedali e delle Cliniche, Milan

Dec. 2, 1915, XXXVI, No. 85, pp. 1329-1344

68 Case of Inguinal Hernia and Femoral Hernia in Single Sac. G. Giusti.

December 5, No. 86, pp. 1345-1360

69 Submammary Incision in Purulent Mastitis. (Il taglio sottomammario nelle mastiti purulente.) N. Latronico.

December 10, No. 88, pp. 1377-1392

70 *Tendency to Hysteria in Older Children. (L'isterismo degli adolescenti.) P. Ercolani.

70. **Hysteria in Older Children.**—Ercolani bases the diagnosis on the heredity, the child's character, education and emotions, but mostly on the hemi-anesthesia, the hysterogenous zones and the effect of drugs or other agents. Epileptic seizures are favorably modified by bromids, while these have no effect on the hysteric. The prognosis is very favorable with the latter if it is treated promptly and properly with general hygiene, removal from a predisposing environment, country air and avoidance of excesses of all kinds and especially onanism. The convulsion may be treated by compression of the hysterogenous points, inhalation of anesthetics and chloral given internally, but the sovereign prophylactic measure is absolute isolation. He lists the hysterogenous zones in children as the bregma, the sternum, the intercostal spaces near the sternum, nearest the scapula or beneath the outer end of the clavicle in the vicinity of the breast, the spinous apophyses of the various sections of the spine, the central portion of the flanks, the inguinal region, the testicle, the prepuce and certain points in the joints. He relates that pressure at these points induces phenomena characteristic of hysteria, and may bring on a hysteric convulsion, while pressure on these hysterogenous points may also arrest the spasm.

Pediatria, Naples

November, 1915, XXIII, No. 11, pp. 753-816

71 *Meningococcus Meningitis in Infants, and Serotherapy. R. Jemma.
72 Transient Fever in the Newly Born. (La febbre transitoria dei neonati.) S. Lo Cicero.

71. **Meningitis in Infants.**—Jemma analyzes his experience with meningitis in six young infants, all recovering completely under intraspinal serotherapy, the dosage large and repeated. The outcome in one case is not known as the parents took the infant away before the disease had run its course. He declares that the serotherapy is effectual at whatever date it is instituted. One of the children did not get its first dose until the forty-seventh day of the meningitis, but it recovered as promptly then as the others. All came from different districts and no other cases of meningitis were known there. When serotherapy proves ineffectual in meningitis, it is either because the doses have been too small or the serum is old and has lost its antitoxic and bacteriotropic property, or because the meningitis is the work of a parameningococcus. In differential diagnosis he lays great stress on the tension in the anterior fontanel and the contracture of the muscles of the spine. Netter has described a paralytic form, the muscles of the back of the neck abnormally relaxed. Lumbar puncture is the only certain means of differentiation, and it is the more important as it is at the same time a therapeutic measure. Called in consultation in another case of apparent meningitis, the absence of the knee-jerks testified against meningitis. The family objected to lumbar puncture being done. Within a few days the meningitic symptoms had subsided, giving way to the classic picture of acute anterior poliomyelitis. The physician must bear in mind that with meningitis the spinal fluid may be found limpid and apparently normal if examined within forty-eight hours of the onset. In the cases reported, the ages of the children ranged from 6 months to 5 years. They were given four or five injections of 20 c.c. each, except that one child of 4 was given 30 c.c. at the fifth injection of the antimeningococcus serum.

Policlinico, Rome

Nov. 28, 1915, XXII, No. 48, pp. 1605-1636

73 Fat Necrosis of the Pancreas; Two Cases Secondary to Cancer of the Biliary Apparatus; Postoperative Necrosis in One. (Appunti casistici sulla patogenesi della steatonecrosi pancreatica.) P. Rusca.

December 5, No. 49, pp. 1637-1668

74 Diffusion of Smallpox Vaccine in the Organism. (Studio della diffusione del vaccino Jenneriano nell'organismo.) L. N. Spolverini.

December, Medical Section, No. 12, pp. 529-572

75 *The Wassermann Reaction Positive in Chronic Disease of the Liver. (Il valore clinico della reazione di Wassermann nelle malattie con lesioni croniche del fegato.) C. Verdozzi and L. Urbani.
76 *The Urochromogen Reaction in Children's Urine. (La reazione di Moritz-Weisz—reazione al permanganato—nelle urine dei bambini sani ed ammalati.) G. Genoese.

75. **The Wassermann Reaction with Disease of the Liver.**—In this second installment of their article Verdozzi and Urbani give the details of twenty-six cases of chronic liver disease in which there was nothing to suggest possible syphilis. In 9 cases of primary or secondary cancer of the liver, the Wassermann was positive in all but one. In the 17 other cases the disease was mostly cirrhosis of the liver and the Wassermann was positive in 9; in 3 the fixation of complement test was positive even without the antigen. In short, in all but 5 of the 26 cases of chronic liver disease the Wassermann test gave a positive reaction. In 27 control cases of acute liver disease or acute affections of other organs, the response was constantly negative.

76. **The Potassium Permanganate Test Applied to Children's Urine.**—During the last three years Genoese has applied Weiss' urochromogen test to the urine of 457 children. Three drops of a 1 per thousand solution of potassium permanganate were added to a test tube containing the urine diluted twice its volume with water. A control tube contains an equal amount of the diluted urine. A yellowish-gold tint is the positive reaction; otherwise the fluid does not change its color or merely turns brownish. The findings were positive in 14 of 30 healthy children; in 25 of 84 cases of pneumonia; in 6 of 26 typhoid cases; in 24 of 56 with enterocolitis; in 12 of 26 children with whooping cough, and in 3 of 6 with scarlet fever. The response was constantly negative only in 6 cases of nephritis and in 8 of chronic hydrocephalus. He compares these findings with similar experiences published by others—the Italians having done a good deal of work in this line. The contradictory and fluctuating findings with the test demonstrate that it has no clinical import but is merely a physical phenomenon, he declares in conclusion.

Riforma Medica, Naples

Nov. 27, 1915, XXXI, No. 48, pp. 1317-1344

77 *Treatment of Arrhythmia. (Sguardo sintetico sulla fisio-patologia e terapia delle aritmie.) G. Rummo.
78 *Products of Putrefaction in the Intestines as Factor in Blood Diseases. O. Cantelli. Commenced in No. 45.
79 *Case of Primary Intestinal Tuberculosis. M. Pennetta.

77. **Treatment of Arrhythmia.**—Rummo reiterates that useful information as to the cause of the arrhythmia can be obtained by studying the modification of the rhythm as the patient changes from a seated or reclining position to stand erect, or holds up a limb or does some other exercise that makes demands on the heart. The response to compression of the femoral arteries is also instructive. These procedures gage the potential energy of which the myocardium is capable, and induce characteristic variations in the rhythm. They are especially instructive when the changes which follow administration of digitalis or strophanthus are noted. This pharmacologic test can be supplemented by the response to pilocarpin (0.0075 to 0.01 gm.) given to stimulate the vagus; atropin (0.001 gm.) to paralyze it, or epinephrin in the same dose to stimulate the sympathetic. A day or so should be allowed to elapse between these tests. Rummo does not place so much confidence as some do on the conception of vagotony and the drug tests for it; he warns that

they must be applied cautiously and with a very critical mind. Tests with drugs which constrict and those which dilate the central or the peripheral portions of the circulation are also liable to afford insight into the causes of the arrhythmia, especially strychnin, epinephrin, the nitrites and amyl nitrite.

Rummo emphasizes that the new terms "heart block," etc., are merely names suggested by our better knowledge of the causes of the disturbance. The conditions themselves are old and familiar syndromes. The arrhythmia is very seldom simple; there is usually disturbance in both contraction and conduction and possibly in the localization of the starting point for the wave of contraction. It is important to recognize the various components of the clinical picture, and combat one or the other as indications demand. For instance, with bradycardia associated with disturbance in the myocardium functioning with failing compensation, we must give digitalis or strophanthus to reenforce the myocardium, although we know that this may aggravate the tendency to heart block.

78. **Causal Connection Between Putrefaction Products in the Intestines and Blood Diseases.**—Cantelli's experiments on rabbits confirmed the assumption that indol has a pronounced destructive action on the blood. The blood findings under its influence were similar to those in the blood with gastric cancer. Just as certain poisons, such as lead, are able to modify the blood until the blood picture suggests the type of pernicious anemia, the products of putrefaction in the intestines are liable to do the same in rabbits and probably also under certain conditions in man. They may also, he says, be responsible for certain forms of what he calls chloroanemia, but not for true chlorosis.

79. **Primary Intestinal Tuberculosis.**—In the case reported by Pennetta a previously healthy man of 21 developed mild intermittent evening fever, with abdominal pain and diarrhea. These symptoms appeared and disappeared again and again, growing progressively worse, and blood was noticed in the stools the second month. Serologic and other tests for tuberculosis, typhoid, paratyphoid and Malta fever were negative, as also the diazo. The temperature finally became subnormal and the abdomen extremely tender, with diffuse meteorism. Death ensued in three months and necropsy revealed tuberculous ulceration in the intestines over a stretch of 4½ feet; two of the ulcers had eaten their way through the bowel. Nothing abnormal was found elsewhere. The fever had been constantly of the hectic type, but very mild and never lasting for more than two weeks at a time so that the affection ran most of its course without fever. The physical depression was slowly progressive, like that with pulmonary tuberculosis, even during intermissions of the other symptoms. The absence of tubercle bacilli from the stools seems to be the rule with primary intestinal tuberculosis. The differential diagnosis therefore may be a difficult matter as the elements for the diagnosis are inconstant and not very characteristic. Prolonged study of the case is the only way to recognize it. Pässler has reported two cases in which it developed as sudden acute septicemia; Strümpell has reported symptomless cases, and Schützler one in which a woman was stabbed in the abdomen in the midst of apparent health, and the laparotomy revealed numerous tuberculous ulcers in the greater portion of the small intestine.

Semana Medica, Buenos Aires

Sept. 9, 1915, XXII, No. 36, pp. 299-328

80 *Cesarean Section for Prolapse of Umbilical Cord. (Tratamiento de la procidencia del cordon por la operacion cesarea.) E. A. Boero.
81 Swallowing of Air and Uncontrollable Vomiting Cured by Suggestion, Tonics and Diversion. (Aero-saliofagia y vomitos incoercibles.) R. G. Pizarro.
82 Toxicity for Protozoa of Certain Stains. (Accion de los colorantes imino y fenolicos nitrados sobre algunas especies de protozoarios.) L. Guglialmelli and J. J. Carbonell.

September 16, No. 37, pp. 329-356

83 *Changes in the Vascular System and Their Bearing on Treatment; especially with Aortic Insufficiency. (El Signo de Hill en la insuficiencia aortica.) R. A. Bullrich.
84 *Diagnosis of Incipient Pulmonary Tuberculosis. C. P. Mayer.
85 Medical Report on the Prisons of La Plata. (Movimiento habido en los servicios medicos de los establecimientos carcelarios de La Plata.) E. M. Catalan.

80. **Cesarean Section for Prolapse of Cord.**—The shallow contracted pelvis was regarded as the main factor in the irreducible prolapse of the cord, and the aseptic labor rendered cesarean section particularly promising in the case reported. Both mother and child left the maternity in good condition the third week.

83. **Diagnostic Differences of Pressure in the Vascular System.**—Bullrich relates that the difference between the maximal pressure in the forearm and at the ankle was from 4 to 7 cm., mercury, in healthy subjects tested, seated. Under the same conditions, the maximal pressure varied from 11 up to 15 cm. mercury in eight patients with aortic insufficiency. These findings confirmed in every respect Hill's statement in 1909 as to the differential value of such changes in the vascular system, confirmed by Hare in 1910.

84. **Diagnosis of Incipient Tuberculosis.**—Mayer gives the details of three cases to emphasize the necessity for suspecting incipient tuberculosis when a person begins to present symptoms of neurasthenia with slight anemia and tendency to unstable temperature. In each he finally discovered some beginning apical lesions on one or both sides.

Russkiy Vrach, Petrograd

Oct. 3, 1915, XIV, No. 40, pp. 937-960

86 *Prophylactic Treatment of Tetanus with Antitetanus Serum. (O predokhranitelnom liechenii protivostolbnyachnoi sivorotkoi stolbnyaka u ranenikh.) V. E. Proscurin.
87 *Fusiform Bacilli. (K voprosu o rasprostranenii veretenoobraznikh bakterii v prirodie.) L. R. Meyer.

October 10, No. 41, pp. 961-984

88 *Traumatic War Neuropsychoses. A. V. Gerver. Commenced in No. 40.
89 Chondrosarcoma of the Manubrium Sterni. L. G. Stukkey.
90 Intracellular Granules of Living Cells Studied with the Paraboloid Condenser. N. N. Anichkoff.

October 17, No. 42, pp. 985-1008

91 Neuropathology; Its Past, Present Status and Future Problems. M. P. Nikitin.
92 Thoracotomy for Removal of Bullets and Shell Fragments from the Diaphragm, Lungs or Pericardium. V. M. Mintz and A. V. Aizenstein.

No. 43, pp. 1009-1032

93 Superior Advantages of Martin's Pepton in Laboratory Work. S. V. Korshun.
94 *Effect of Air Concussion on the Central Nervous System. (Encephalomyelopathia aero-traumatica s. Neuropathia e contusione aeria.) S. A. Soukhanoff.
95 My Conception of Hysteria. L. O. Darkshevitch. Commenced in No. 41.
96 Ovum a Spermatozoid. (Yaitzo i zhivchik.) A. T. Brandt. Commenced in No. 40.

86. **Preventive Antitetanus Serum Before Operations.**—Proscurin warmly recommends prophylactic injection of antitetanus serum twenty-four hours before any operation on a wounded soldier for prolonged suppuration, and for removal of bullets or fragments of shells. In the majority of cases it is possible to get along without an operation, but when it is necessary to interfere surgically, a prophylactic injection of the antiserum gives good results. During eight months Proscurin had fifteen cases of tetanus and only two of these patients recovered. During the two following months, in which the prophylactic injections were made, tetanus developed but once, and in this single case the preventive injection had been neglected.

87. **Fusiform Bacilli.**—Meyer studied 489 animals, belonging to forty-two various species, for the presence of fusiform bacilli. He found them in every type. They were discovered in the buccal cavity, rectum, and even in the intestines of leeches. He did not find them in fish, spiders and some species of worms. Whether the fusiform bacilli of such widespread occurrence, represent a uniform type, or show variations, he does not pretend to say, as special studies would be necessary to determine this. Yet he points out that the bacteria found in various animals differ in certain morphologic respects, as he describes.

88. **Neuroses and Psychoneuroses in the Soldiers.**—Gerver divides the traumatic lesions of the nervous and psychic spheres (in soldiers) into the traumatic psychoneuroses and traumatic neuroses. Both may be traced to contusions, especially those caused by air concussion or by wounds. The clinical picture of the traumatic psychoneuroses resembles that of common traumatic neuroses, differing from the latter by peculiar hallucinations, illusions, obstinate focal symptoms and a peculiar condition of the upper lids, an inability to raise the upper lid after it has remained closed for a few seconds. The traumatic psychoneuroses from air contusion are especially severe, as they show signs of diffuse lesions of the central nervous system. In those caused by wounds, the local symptoms predominate and the course is milder. The air concussion causes probably diffuse pathologic anatomic changes in the central nervous system, such as molecular changes, miliary hemorrhages, thrombosis and necrosis. The treatment must be individualized, rest being the most important item.

94. **Air Concussion and the Central Nervous System.**—Nervous disorders arising in soldiers from violent shell explosions are, according to Soukhanoff, in the greatest majority of cases due to organic causes. Though no external signs of lesions can be found, no wounds of the skin or head and no fractures, etc., the resulting symptoms such as mental confusion, depression, amnesia, ear and eye disturbances, paralysis, etc., are due to real anatomic changes in the central nervous system. This assumption is sustained by the findings in the spinal fluid such as blood, abnormal albumin content and lymphocytosis, and the subsequent wasting of muscle. Psychogenous and hysteric symptoms may complicate the clinical picture, but they are of secondary nature. Therefore, Soukhanoff thinks that the disturbances should not be entitled "contusion psychoneurosis" but should be designated as air traumatism of the brain and spinal cord. The pathogenesis of these lesions may be explained partly by the action of the rarefied atmosphere from the passing shell and partly by the formation of emboli in the blood, as in caisson disease. The immediate action of the condensed air may hurl the man to the ground and cause a state resembling the so-called concussion of the brain. The poisonous gases resulting from the shell explosion, the emotional shock and, possibly, hemorrhages in the central nervous system from an involuntary violent muscular effort are among other factors liable in this morbid condition.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

Nov. 27, 1915, II, No. 22, pp. 2367-2458

97 *Stomach Disturbances from Benign Enlargement of Glands near the Pylorus. (Over maagstoornissen, veroorzaakt door goedaardige vergrooting van klieren in het gebied van den pylorus.) R. de J. de Jong.

98 The Cholera Vibrios Found at the Quarantine Station at El Tor, Sinai. (Het El-Torvraagstuk in de bacteriologie.) J. J. van Loghem.

99 Two Cases of Persisting Hyaloid Artery with Peculiar Restriction of Visual Field. (Twee gevallen van arteria hyaloidea persistens met een eigenaardige gezichtsveldbeperking.) P. J. Waardenburg.

December 4, No. 23, pp. 2459-2550

100 Presenile Dementia of Alzheimer Type; Two Cases. (De ziekte van Alzheimer.) G. P. Frets.

101 Vaccination against Hay Fever. (Voorbehoedende vaccinatie tegen hooikoorts.) B. P. Sormani.

102 Luminal in Treatment of Epilepsy. A. Schoondermark.

103 Free Body Found in Woman's Abdomen. (Een corpus liberum uit de buikholte.) S. M. Kropveld.

97. **Benign Proliferation of Glands in the Stomach.**—De Jong describes in detail four cases in which there had been more or less serious disturbances on the part of the stomach. In three the normal glands near the pylorus had proliferated, narrowing the lumen. In the fourth case there was a lump of aberrant pancreas tissue obstructing the lumen. The assumption of malignant disease had been amply justified by the disturbances, and the discovery of the absolutely normal microscopic tissue in the tumors was a great relief. One patient was a woman of 38 and she had had stomach trouble for over two years, with much pain and emaciation. There was also a history of a period of similar trouble at 18. The stomach sagged and was much dilated. The lumen at the pylorus was obstructed by a ring of enlarged Brunner's glands and complete recovery followed resection of the pylorus and gastro-enterostomy. Nothing was found to suggest an inflammatory process. In a second case the enlarged glands formed a single tumor in the duodenum. The boy of 12 succumbed to sarcoma of the tibia but shortly before death complained of severe abdominal pain, explained by perforation of the ulcerated and enlarged glands. The third patient was a man of 28 who died from perforating ulcers, two in the stomach and two in the duodenum. One of the former had developed on an enlarged gland. In all three the proliferating gland tissue was apparently entirely normal. The condition is not like that of congenital hypertrophy of the pylorus, but its cause is fully as much of a mystery as the latter. Both are primary affections. He does not know of any similar cases on record in which the connection with gastric disturbances was ascertained during life although Alsleben has reported some similar findings in cadavers. De Jong recently discovered a small cyst at the pylorus in the cadaver of a man of 46, but there was no history of stomach trouble in this case. The smooth elastic cyst had evidently not interfered with the stomach functioning or emptying.

In De Jong's fourth case a man of 38 had suffered severely from stomach disturbances for eight years. No tumor could be palpated in the stomach and on the assumption of a duodenal ulcer the abdomen was opened. Nothing abnormal was found except a small bunch close to the pylorus, with a broad base in the mucosa. It was about the size of a pea but covered a space as large as a finger nail. It was easily resected and the patient was freed at one stroke from all his disturbances. The tumor proved to be aberrant but apparently normal pancreas tissue. Illustrations are given of sections of the tumors in the various cases.

Hospitalstidende, Copenhagen

Dec. 15, 1915, LVIII, No. 50, pp. 1275-1302

104 *Pathologic Findings in the Cerebrospinal Fluid in Syphilis. (Undersøgelse over Lymphocytose, Hyperalbuminose og Wassermann's Reaktion i Cerebrospinalvædsken ved Syphilis.) C. With. Commenced in No. 49.

104. **The Spinal Fluid in Syphilis.**—With found pathologic reactions in the spinal fluid in 16.5 per cent. of 212 syphilitics in the secondary stage. Including the doubtful reactions, the proportion was 26.4 per cent. The Wassermann reaction was positive with the spinal fluid in 3.3 per cent.; there was pathologic albumin content in 9 per cent. and, pleocytosis in 12.7 per cent. He classifies all this material, also 41 patients with latent and 17 with tertiary syphilis, 21 with congenital tardy untreated syphilis and 6 cases in which treatment had been applied. Of 27 congenital tardy cases, the spinal fluid was unmistakably pathologic in 8 and probably pathologic in 3 more—a proportion of 30 and 40 per cent. Of 15 patients with nervous syphilis, only 3 had a normal fluid, and only 3 of 23 with syphilitic disturbance of the central nervous system. In 20 in this group there was pathologic albumin, in 17 pleocytosis, and in 12 the Wassermann reaction was positive in the fluid. He gives further details of this extensive study of 700 specimens of fluid from 500 patients and controls.

Hygiea, Stockholm

1915, LXXVII, No. 21, pp. 1265-1328

105 *Blotting Paper Test for Acidity in the Stomach. (Studier over I. Holmgrens kapillaranalys.) S. Orell.

106 Present Status of Diathermia. (Om diatermi.) G. Heüman.

105. **Capillary Analysis of Gastric Acidity.**—Holmgren's blotting paper test for gastric acidity was described in The Journal, March 18, 1911, p. 857. Orell has been giving it a thorough trial anew with comparative tests. He found that there was quite a difference between the results he obtained and those recorded by Holmgren, and finally traced this error to the drying out of the blotting paper that had been used. It was so old that it had lost much of its adsorbing properties and the figures obtained were too high. The findings after five minutes are taken as the standard. When ten minutes have elapsed the probability of error is enhanced.